

# AVIATION WEEK

A MCGRAW-HILL PUBLICATION

SEPT. 22, 1952

50 CENTS

## LITTLE MOTOR IN A TOUGH SPOT

That's it framed there on the left—a Honeywell standard model actuator.

Looks kind of tiny, doesn't it, next to the "Major," the giant Pratt & Whitney engine it serves aboard a Boeing Stratocruiser?

It may be little, but it's certainly not delicate.

For in the course of performing its job of opening and closing the wastegate of the engine's turbo-supercharger, this particular Honeywell actuator has absorbed hundreds of hours of punishment. Yet in spite of vibration, heat, pounding, dust—it performs as efficiently as the day it was installed.

There is a whole "family" of Honeywell actuators as tough and dependable as this one. They're designed to perform a wide variety of remote control jobs—from the one described above, to positioning dampers on aircraft heating ducts. Built to exceed the most rigid Air Force specifications, they're now available to manufacturers who are looking for rugged, quality performance.

A letter addressed to Dept. 407 (AW), Honeywell Aero Division, Minneapolis 13, Minnesota, will bring you full facts about our actuator line.

MINNEAPOLIS  
**Honeywell**



*Aeronautical Controls*







**a typical military application**

**We call it mechatronics\***  
as a symbol for Servomechanisms<sup>®</sup>, Inc., technique for the multiple and interchangeable use of standard, functionally packaged, servo components in varied electronic and electro-mechanical systems. mechatronics fulfills the urgent need for:

- Spatial Adaptability
- Instant Maintainability
- Training Simplicity
- Ease of Assembly

**A typical Servomechanisms, Inc. assembly using packaged functions.**

**SERVOmechanISMS INC.**

**POSE AND STEWART AVES., WESTBURY, N. Y.**

\*Mechatronics is a registered trademark of Servomechanisms, Inc.

RI: Longmeadow, Florida—El Segundo, Calif.

### Domestic

40,000 aircraft workers went idle as the Los Angeles area lost work when 17,000 employees at Douglas Aircraft Co.'s El Segundo plant went on strike. While the El Segundo local of the AFL International Association of Machinists voted 2,107 to 1,156 for the strike, the Santa Monica local voted 2,188 to 1,137 to accept the company's offer of a 6 percent pay increase plus other benefits, and production continued at that plant. At Lockheed, the strike of 15,000 IAM members continued, but did not affect production at the company's facilities. Lockheed Aircraft Service, Inc.

McDonnell F-101 Voodoo two- or four-engine fighter has been ordered in substantial numbers for the Strategic Air Command. With other USAF and Navy orders, this brings McDonnell's backlog to almost \$140 million.

Army Secretary Frank Pace and other high-ranking Army officials were "greatly impressed" by last week's demonstration of American Helicopter's collapsible single-plus XH-25 helicopter. Pace arrived at "beginning of use out" for Army aviation.

DC-3 crash-landed in a New River swamp about five miles north of Elizabeth when three engines crumpled within 119 feet last week. William Oswald chief test pilot of Budd Co. which had sold the plane to Wain-Alstern Aircraft, was saving the DC-3's fuel tank fuel when both engines went dead. One arm dived from the plane as James Northing Oswald was the other two men aboard were injured.

San Marine Corp. FVF Panther missed a crash-landing exercise in South Korea while returning from a mission Sept. 18. The plane, on its first flight, had been diverted from their base because of bad weather and were landing for an emergency field when they hit the 1,000-ft peak, killing all the pilots.

24 Lt David Claude Ryan, 22, eldest son of T. Claude Ryan, aircraft builder, was killed when his F-86 failed to pull out of a low-level bombing run, just two weeks before he was to have completed his advanced training in a jet pilot at Nellis AFB, Las Vegas.

New York International Airport's new control tower was dedicated at 10:00 Sept. 16. The \$1-million cost of the 190-ft, 11-story tower includes



ALUMINUM ANNIVERSARY of the Boeing Superfortress was celebrated Sept. 21, two years after the last B-57D, almost an olive drab, took off from Seattle's Boeing Field in 1962. It was not until June 1944 that the public heard of the new Super-

son than \$600,000 worth of radio and radar.

Guy M. Turner, 61, aviation pioneer and superintendent of Oakland, Calif., airport for 25 years, died on Oakland Sept. 10. He helped pioneer a 7,000-ft runway at Oakland for the Martin-Hoppeberg flight to Elwood in Army's "End of Freedom." During World War II he was a chief aviation consultant in the Navy. He was awarded a membership in the Institute of the Aeronautical Sciences in 1956.

Jet fuel supply could be increased, at small expense, would save money in the production of such fuels, experts at the National Petroleum Ass'n's Guideline Symposium in Atlantic City agreed. Jet fuels are now available in adequate quantities, but almost everywhere would change that, the experts were told.

Boeing's T-35A factory-made parts will be used in "testbeds" for USAF mechanics under a new Air Training Command program. The new could be trained in hundreds of T-35As, and because before they set ones on the plane itself. Production of the USAF trainer, now in the testing stage, will start on completion of new \$1.1-million building at the main Boeing aircraft plant, Wichita.

A. F. Fontaine, vice president and general manager of Consolidated Vertec Aircraft Corp., San Diego, will sign up U-1, to accept a new position in the Fort Worth, president Gen. Joseph T. McNamara declined last week. Mr. Fontaine will take the duties formerly handled by Fontaine to his own. In another company move, Charles D. Perrow, formerly assistant chief engineer for missiles and electronics, San Diego, was named assistant division manager of the F-4 Phantom II missiles division.

that the world's largest and fastest-acting fleet of the Superfortresses is being kept. A total of 3,970 B-57Ds had been built (3,700 by Boeing, 268 by Bell Aircraft, and 136 by Glenn L. Martin, when production ceased.

### Financial

Truax Aircraft Corp. has declared regular quarterly dividend of five cents plus five cents extra, payable Sept. 30.

Cassia Aircraft Co. reports actual sales of private airplanes in excess of \$1.5 million for August, its largest unit and dollar volume this year. Cassia has led the industry in private plane sales each month this year, the company claims.

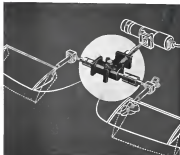
### International

Paul Ernst Heinkel, German aircraft designer, believes West Germany should be licensed to produce Fokker aircraft designs, as without German production he does not think demand can be satisfied. Germany still has the technical capacity for building aircraft, Heinkel stated after a visit to the SLMC display at Farnborough, England, although such of its intricate tools, plant and equipment would have to be brought in. He has no hope of catching up with the progress made in the seven years Germany has lost, at production should start later next year. British jet engines have been developed to "outside" any instance" following the loss of German construction during the war, Heinkel says, and the use of the popular place in "rapidly moving it and"

Austrian imports of aviation profits increased to over \$4 million last year, compared with the previous year's \$1.5 million. Exports of aircraft and parts were worth \$4.4 million.

Trans-Australia Airlines' new customers have been used so extensively that they have ground more than their taxes their initial cost in four years, the company says. Maintenance costs have been below expectations. The company states that only government refusal to increase dollar rates keeps it from being more content.

# ANGLe<sup>®</sup> supplements rotary actuator on TRIM TAB CONTROL SYSTEM



In some aircraft installations, ANGLe<sup>®</sup>s supplement other Airborne products. This horizontal stabilizer trim tab control system is a good example of such an application.

A 3-way ANGLe<sup>®</sup> right angle, bevel gear unit, an R-118 Rotarc<sup>®</sup> Electric Rotary Actuator, two screw jacks and suitable linkage make up the system.

ANGLe<sup>®</sup>s have hardened gears, ball bearings, flanged end mountings, 3-bolt end mountings, and an internal pilot on mounting ends. Ratio is 1:1. Lubricated for life.

Two built sizes with three ratings are described in the I. A. S. Aeronautical Engineering Catalog. Consult it for dimensions and other pertinent information.

**AIRBORNE**  
ACCESSORIES CORPORATION  
1414 CHERRY AVENUE, HILFIDE 5, NEW JERSEY

## AVIATION CALENDAR

- Sept. 23-25-Air Transport Assn. annual engineering and maintenance conference, Holiday House, Miami Beach, Fla. (closed morning the 24th).
- Sept. 24-26-Radio Technical Committee for Aeronautics fall assembly meeting, Hotel Statler, Buffalo, N. Y.
- Sept. 26-28-Aero Model Assn., annual meeting, Reno, France.
- Sept. 27-Mechanical Air Test dinner and lounge dance (National Order of the Dags, National) in, Mesa.
- Sept. 29-Oct. 1-National Electronics Conference, Sheraton Hotel, Chicago.
- Sept. 30-Oct. 2-Aircraft Spark Plug and Ignition Conference, sponsored by Champion Spark Plug Co., Toledo.
- Oct. 1-4-Society of Automotive Engineers national convention meeting, aircraft engineering display and aircraft production forum, Jacon Hotel, Los Angeles.
- Oct. 7-8-National Electrical Society south central display meeting, Fox Pacific Auditorium, Los Angeles.
- Oct. 8-13-Algeon management operations conference, Oklahoma University.
- Oct. 10-13-Fourth annual All-Texas Air Test, information available from Texas Aeronautics Commission, Austin.
- Oct. 19-24-American Writing Society national fall meeting, Bellevue-Stratford Hotel, Philadelphia.
- Oct. 25-Nov. 2-International aviation and travel exposition, Navy Fair, Chicago.
- Oct. 25-28-Thompson Aircraft Builders' Syntex Conference, sponsored by Vickers, Inc., Hotel Park Sheraton, Detroit.
- Oct. 28-30-AEE Air Transport Committee annual meeting, Commodore Perry Hotel, Toledo.
- Oct. 29-31-AEE conference on machine tools, Ten Eyck Hotel, Albany, N. Y.
- Nov. 6-7-National Rules and Lubricants meeting, Society of Automotive Engineers, The Mayo, Tulsa, Okla.
- Nov. 10-12-Piper distributors' annual meeting, Look Hotel, Pa.
- Nov. 17-18-National Aviation Trade Assn. annual convention, Hollywood Sheraton Hotel, Los Angeles.
- Dec. 2-Symposium on light-metal heavy forgings and extrusions for aircraft, AIAA, AIME, IAS and AIME.
- Dec. 10-12-Joint AIEEE/AECM conference on electronic computers Park Sheraton Hotel, New York.

### PICTURE CREDITS

1-Boeing; 2-CDS; 3-CDS; 4-CDS; 5-CDS; 6-CDS; 7-CDS; 8-CDS; 9-CDS; 10-CDS; 11-CDS; 12-CDS; 13-CDS; 14-CDS; 15-CDS; 16-CDS; 17-CDS; 18-CDS; 19-CDS; 20-CDS; 21-CDS; 22-CDS; 23-CDS; 24-CDS; 25-CDS; 26-CDS; 27-CDS; 28-CDS; 29-CDS; 30-CDS; 31-CDS; 32-CDS; 33-CDS; 34-CDS; 35-CDS; 36-CDS; 37-CDS; 38-CDS; 39-CDS; 40-CDS; 41-CDS; 42-CDS; 43-CDS; 44-CDS; 45-CDS; 46-CDS; 47-CDS; 48-CDS; 49-CDS; 50-CDS; 51-CDS; 52-CDS; 53-CDS; 54-CDS; 55-CDS; 56-CDS; 57-CDS; 58-CDS; 59-CDS; 60-CDS; 61-CDS; 62-CDS; 63-CDS; 64-CDS; 65-CDS; 66-CDS; 67-CDS; 68-CDS; 69-CDS; 70-CDS; 71-CDS; 72-CDS; 73-CDS; 74-CDS; 75-CDS; 76-CDS; 77-CDS; 78-CDS; 79-CDS; 80-CDS; 81-CDS; 82-CDS; 83-CDS; 84-CDS; 85-CDS; 86-CDS; 87-CDS; 88-CDS; 89-CDS; 90-CDS; 91-CDS; 92-CDS; 93-CDS; 94-CDS; 95-CDS; 96-CDS; 97-CDS; 98-CDS; 99-CDS; 100-CDS.



COUGARS AND CUTLASS GET SE-U—Two new Grumman F-4B Cougars (foreground) and a silver Chance Vought F-4U Corsair (left) are in action in the Pacific. Navy wing leaders on the Cougars.



## New Jets Try Their Sea Wings

CUTLASS DRAWS A CROWD—The big Navy jet F-4B Cougar (left) is surrounded by Navy men while being fueled aboard the Midway.

FURY SEARCHED FOR TAKEOFF—North American XF-2 Fury (below) gets backed up to one of the Midway's deep-vent engine drives during its carrier trials. All three new types of Navy fighters recently passed the carrier qualification tests.



## INDUSTRY OBSERVER

This week's column was edited from London by ANTHONY WHITE, executive editor Robert R. Hiza, who is studying the British aircraft industry after attending the annual SBAC show at Farnborough.

► Four offshore purchase contracts for the British aircraft industry will go to Vickers/Aerobionics for the Supermarine Swift. Contract may involve up to 350 Swifts to be produced first in Britain. Later, Vickers probably will supply airplanes from Holland. Final details on the contract are now being worked out in London, and negotiations between the British and Dutch also are reaching a climax.

► The Hawker Hunter may not qualify for offshore purchase delivery date of 1975 because of production lag and RAF priority. Second offshore contract is likely to go to successful DH Venom night fighters in Italy. Five Hawker Venoms are to be ordered.

► There is growing appreciation in top British aviation circles of transonic performance and combat ability of the North American F-6 Sabre. British, who a few years ago were inclined to regard the North American wingback in preference, now candidly admit this streak is straight wing, too long and as the result are without a line-of-RAF fighter in service.

► Shortly before he died, the late John Derry, crack de Havilland transonic test pilot, wrote: "Recent show by the F-6s had the audience (all experienced pilots) on their toes. It may have been near the bone, but few pilots can leave their aircraft better and few test pilots would have believed the highly loaded American aircraft capable of such maneuvers had they not witnessed them."

► RAF expects to get about 300 Canadian orders with General Electric J67 engines next year. The earlier scheme to provide RAF with Sabre aircraft with British Rolls-Royce Avon was scrapped because B.R. couldn't make sufficient engines in addition to heavy British military requirements in time to meet the proposed delivery schedule. British pilots believe the Sabre being built in Australia with Avon and armed with four 30-mm cannon was by the best of the F-6s types now being built in these countries.

► Truax Engineering and Manufacturing Co. of Dallas is building a new military trainer powered by an Armstrong Siddeley Mamba turbo-prop rated at 1,475 chp. The new Truax trainer is due in 6, this fall.

► Napier's compound engine, the N5000, may be used in later versions of the Bristol Britannia transport if early promise of extremely low fuel consumption is realized in actual flight operations. Napier also, also be used in the new Saunders-Roe flying boat project. But the project has a few priority at present, despite a definite military improvement for a long-range patrol boat for the R.Y.F. Coastal Command. The N5000 still is in early development stage and will not be ready for regular airplane installations for some time.

► Both the big Avon delta 698 bomber and the Glanville Jet-4 delta night fighter are using the latest updated versions of the Avon and Sapphire, respectively. The Avon 698 is powered by four 7,500-lb.-thrust Avons, while the Jet-4 uses a pair of 3,500-lb.-thrust Sapphires.

► English Electric has a transonic bomber design in the works featuring an over-wing installation of two jet engines similar to the Shou S. A. 4 cassette arrangement.

► There is no chance in sight for really large aircraft in Britain. Second and third Saunders-Roe Princess flying boats and the second Bristol Britannia are being scheduled before completion. Second City of Air House (the project has been taken over by Saunders-Roe) will be dismantled after completing 25 lb. flight testing.

## WHO'S WHERE

### In the Front Office

William F. Gandy has joined Keeser Aircraft Corp., Windsor Locks, Conn., as assistant to the president. He will handle outside manufacturing. His prior position was purchasing agent for Chance Vought Aircraft.

### Changes

Edward F. Koenigsberg has been named to the newly created position of chief development engineer, general design, for the Navy Aircraft Division, Bridgeport. Cass Miller A. Wachs has advanced to chief development engineer, component design, and Ralph B. Lockwood has been designated chief of new systems and flight research. Other promotions and new hires include Walter Koenigsberg, chief of design; Harry J. Jones, chief test engineer; Donald M. French, senior project engineer; and Ralph A. Allen, development engineer.

Robert H. Frost has been promoted to chief engineer for Aviation Action Corp., Buffalo, N. Y.

Donald E. Murphy has been appointed manager of a new department for personnel and industrial relations at the Aero-chemical Division of Mississippi-Hampden Republic Co., Mississippi.

C. B. Butler Watson, formerly technical editor of the British aviation weekly, Flight, has joined British Aerospace Co., Ltd., as public relations manager.

John Allen has joined Lake Erie Engineering Corp., Buffalo, N. Y., as project engineer.

John F. Chaff has been appointed assistant factory manager of Aeromarine division of General Motors, Dayton, Ohio.

Jack Motter, formerly sales engineer for British Aircraft Corp., Wichita, Kans., has been named West engine sales representative for the firm.

Yves F. Kallia has been designated as chief plant manager for Keeser Aircraft, Windsor Locks, Conn.

Joseph S. Allen has been named field engineer at the New York office of Sola Aircraft Co., replacing John L. Downes, who resigned to join General Electric Co. at Lockland, Ohio.

S. P. Stanley has been made general test manager and assistant to vice president of Phillips Petroleum Co., Bartlesville, Okla. Bud E. Wirth has been named customer service representative for Standard Automotive Co., Long Field, Dallas. E. E. Chapman succeeds him as SAGE's service parts manager.

### What They're Doing

Henry M. Bostain has sold his interest in Airway Engineering Corp., and has joined his own firm, Henry M. Bostain & Associates, aviation ground installations service. The firm is located at 235 Jones Road, Great Neck, Md.



Hamilton Standard's long experience as a leader in propeller design and production is also devoted to supplying other equipment for such outstanding airplanes as the Douglas F4D Skyray jet fighter for the U. S. Navy.

William Matt Rice



PROPELLERS • STARTERS • AIR CONDITIONERS • FUEL CONTROLS • AUXILIARY DRIVES • HYDRAULIC PUMPS

THE BENDIX IGNITION ANALYZER GIVES  
ADVANCE WARNING OF SPARK PLUG FAILURE

*Result:* ADDED SAFETY

THE POINT OF NO RETURN BECOMES  
A POINT OF ASSURANCE

The Bendix Ignition Analyzer actually forces the failure by predicting the remaining life of each plug. With the Ignition Voltage Control the operator can determine the present efficiency of all spark plugs and get the finger on any weakness in the system—even though it has not yet affected the operation. If the control reveals impending trouble, extensive action may be taken before critical hours take place. With an accurate installation of the Ignition Analyzer, the test can be made before an over-water flight reaches the point of no return. By viewing the wave forms on the face of the scope and comparing with known patterns, the operator can quickly make the right choice . . . to return without refueling, to operate at reduced power and prevent complete engine failure or to continue safely at cruising speed.

So, for maximum safety and operating efficiency it pays to make provision for installation of a Bendix Ignition Analyzer on all your aircraft.

Detailed information available on request.



*Costs Less—Does More*

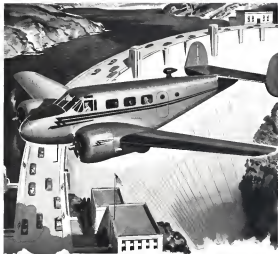
The Bendix Ignition Analyzer is available for other engines or portable engine installations. It can be used with either high or low tension magnets or battery ignition. It is the ignition analyzer that can predict spark plug failure before it occurs . . . make an efficient check of more than one spark plug at a time and do so in a large, easy to read scope . . . yet at much less than comparable analyzers.



SCINTILLA MAGNETO DIVISION OF  
SPERRY, NEW YORK



FACTORY BRANCH OFFICE: 117 S. Presidential Avenue, Redlands, California • Distribution Building, 6560 Carr Avenue, Detroit 2, Michigan  
Branch Office: 515 W. Wisconsin Avenue, Milwaukee, Wisconsin • 222 Market Street, San Francisco 4, California



*HELPING AMERICA BUILD FASTER*

**Key men in utilities get more done — with Beechcraft**

**W**hen the pressure on all public utilities, company-owned Beechcrafts have daily serving executives in these fields — by making their time count for more. Beechcrafts reduce trip hours as much as 35%. Key men get more done. Power shutdowns are cut to the test as taken to the replacement parts to trouble spots.

In every field of business, Beechcrafts are helping America build faster . . . helping men do today's double job of defense and consumer goods production. Find out what Beechcraft ownership can do for your business. Call your Beechcraft distributor. Or write today to Beech Aircraft Corporation, Wichita, Kansas.



BECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

## Airplane Spending

Top Defense Department officials put the brakes last week on expenditures over progress of the defense program.

They had countered Senate Republicans' criticism of the black picture of lagging aircraft production with a new picture of achievement. Output is up over five times the rate of two years ago.

But when the new member of the President's Council of Economic Advisors, Robert Turner, went so far as to indicate that the buildup is slow, even, and slow to start down, by comparing that expenditures have already "substantially reached their peak," Defense Department contradicted with vigor.

The picture on expenditures for aircraft and related production—payments to manufacturers.

The peak will be reached later the middle of 1964. There will be some decline starting then, but expenditures will continue at a high level another year.

To the current 1973 fiscal year, which ends July 1, expenditures, totaling an estimated \$9.5 billion, will be almost double the 1952 fiscal expenditures of \$5.5 billion.

During 1951 fiscal, the year following the Korean outbreak, expenditures amounted to \$2.5 billion.

## Contract-Letting

An Air Force started off the 1973 fiscal year with a high rate of contract-letting. In recent, last New York City. In the first quarter of the year, July, USAF obligated \$9.9 billion for aircraft and related procurement. AF has \$12 billion for the year. \$11 billion came over and \$11 billion new money.

New obligations, only \$111 million for aircraft and related procurement. It has \$3.6 billion for the year. \$1.5 billion new, plus a \$51.5 million carryover.

## USAF: More Command Recognition

An Air Force is staging a drive for more recognition in joint commands on the globe.

An Secretary Thomas Finletter launched the drive in a public address.

"The U.S. now has commitments in many areas, commitments in which elements of the Army, Navy and Air Force are represented. The U.S. also is part of international forces... So far the command positions have been largely in the hands of representatives of other services, whether those of the U.S. or of some other country. The concept is still strong that the air is an auxiliary arm and not a full partner in terms of responsibility."

"This is a concept which no longer fits our situation to fact. In our future war, the air will play a key, and in our opinion, the decisive role. Its responsibility will be greater, not smaller. It follows that representatives of command must recognize these facts and that the air of all nations, including ours, must be given their full share of command responsibility."

Fin is the picture on international commands.

North Atlantic, North Atlantic Treaty Organization has three command two commands.

Seapower Command Allied Forces in Europe: Gen. Matthew Ridgway (Army).

Seapower Allied Command Atlantic: Adm. Louis McCulloch.

Commander U.S. Strategic Air Force: President of the U.S. SAC is under the direction of the President.

The other two NATO commands report to the 12-member top policy council of NATO.

And in the two commands under NATO:

• Southern Command is under a Navy man, Adm. Robert Carney (U.S.). An commander in chief Allied Forces Southern Europe, he commands land, sea and aerial forces in the area.

• Northern Command also is under a Navy man, Gen. Robert Carney (U.S.). An commander in chief Allied Forces Northern Europe, he also commands land, sea and aerial forces in the area.

• Central Command is not just three regional commands, only one located by an aircraft. Lt. Gen. Louis Norstad (U.S.). He is commander in chief Allied Forces Central Europe. Commander in chief Allied Land Forces Central Europe is a French General of the Army.

And in the two commands under NATO:

• Pacific. A Navy man, Adm. Arthur Radford, is U.S.'s representative on the Joint Chiefs of Staff of the Pacific Command, now being formed, with U.S., Australian and New Zealand the original participants. It will be the Pacific counterpart to NATO.

• Far East. Command of direction, Korean operations is headed by Army man, Gen. Mark Clark.

U.S. joint commands are split evenly.

Navy. The two main commands are both headed by Navy men. Pacific Command by Adm. Arthur Radford and Atlantic Command by Adm. Louis McCulloch.

Army men lead the Caribbean Command (Lt. Gen. H. H. Arnold) and U.S. forces in Austria (Lt. Gen. George Hays).

All Force officers lead the African Command (Lt. Gen. William K. Harrison) and the North East Command (Maj. Gen. Charles M. Smith), which includes the German-led Lebanese area, vital in air warfare.

## Anti-Air Defense: Army Mission

Army is aggressively pushing its role as an air defense, has already more than doubled the number of its anti-aircraft battalions since the Korean outbreak, expanding from 46 to 189. The target is even broader.

"The effectiveness of present air defense is not being met," Chief of Staff Gen. Leslie Groves reports. "During World War II, we lost many more planes to enemy aircraft than to enemy ships. And in Korea, 87% of the UN's planes lost in combat have been lost because of enemy ground fire."

His outline of Army's program for air defense:

"For low flying planes that come in 'on the deck,' we have the self-propelled 40-mm. guns and 56-caliber machine guns, which are capable of great fire power and rapid movement. For intermediate targets, we have the new radar-controlled 75-mm. howitzer gun. For high altitudes, we have our 90's and our 128's which are also directed to the target by radar. And to control the expensive batteries of the future, we are vigorously pushing the development of superior guided missiles and fire rockets. Our program in the Nike anti-aircraft guided missile is not only developing and we have already achieved lift on maneuvering down aircraft at great ranges and altitudes."

—Efficiency Journal

## British Speed Empire-Wide Coach Service

- BEA plans air tourist system throughout Europe; BOAC to spread service to Africa and Asia.
- And the government, seeing the service as a prime defense aid, is strengthening the monsoons.

By Robert B. Hatz  
(By Cable to AVIATION WEEK)

London—The British airlines, after a long period of inactivity, are now at last to accept U.S. ideas on large-scale aircraft, now as the thoroughly solid that they can plan, plus their government backing, present an expansion of tourist service throughout the world.

Government agencies and the two British airline companies are pushing aircraft in hard to push, both as a source of revenue and for strengthening the Empire's far-flung base of communications.

Here, at the latest developments:

- British Overseas Airways Corp. is to introduce a new aircraft, the new aircraft service has been an unqualified success.

So Miles Thomas, BOAC chairman, is negotiating arrangements to extend coach services to Africa and Asia.

• The British government has taken out a field in the Colonial Empire for British aircraft, which are now being used for transport, mail, and military services to help them operate.

Full scale of such expansion in Europe, Asia and Africa is scheduled to be determined at an inter-Allied Air Transport Agreement meeting in Geneva last week, but advance word was that city talks agreements were in progress.

• BOAC, British Airways, will operate London Paris coach by special agreement with Air France, but IATA approval is required for further expansion of both BEA and BOAC service plans.

During the first four months of its new Atlantic coach service between London New York, British Overseas Airways has carried 11,888 passengers in 68 passenger Conquerors. Meanwhile, BOAC's first-class trans-Atlantic travel also showed an increase during

the same period, conveying 80,000 miles by high command that service was helping an entirely new market in air travel that was simply upholding customer from familiar travel.

• Masfild's Moves—Perhaps the most enthusiastic approach appears in Europe as from Masfild, dynamic chief executive of BEA, who plans positively to extend the low fare tourist service over most of BEA's 15,000 route miles in a European-extended network.

BEA's routes the direct routes are outside of the United States. Masfild is convinced that tourist service will tap a vast new air travel market in the area and will boost the stand and method of travel with function service in the future on the value.

According to IATA definition, approach service simply sets the seat, with a reduced baggage allowance from 50 to 15 lb. Only coffee and cakes are served but in Bagel, although both food and drink may be sold in flight.

• Details of Two Cities—BEA is beginning its London Paris aircraft service with Vikings carrying 34 passengers in total of 17, by adding a center aisle of seats, making a four-above arrangement. Eight flights daily are planned, with 40% reduction from standard fares for night schedules, and a 15% reduction for daylight flights. During the dark winter months BEA plans to convert a large portion of its 49-passenger Viking fleet so the planes can be altered quickly from five-above to coach versions in most traffic demands.

By next summer, BEA plans to IATA approval, Masfild hopes to extend air coach service to Ireland and Scotland. Douglas-built, Pratt & Whitney-powered converted DC-3s that BEA operates in 12 passenger transport also will be used to supplement the Vikings on coach operations.

BEA's first-class operations will use some Vikings and all Alouette Kiwis between an Airship Victoria. Kiwis, which Masfild describes by BEA as solid coaches with Vikings go into service next spring. The Elizabethan will be modified into 50-passenger coaches. For the future Masfild en-



MASFILD: Vent a head for future.

visions a two-above service twice the size of the present Douglas, carrying 180 passengers on 300-hour coach service. The present Douglas can be modified for 53 passengers in an aircraft version of traffic demands.

As more commercial equipment becomes available, Masfild believes tourist fares will be reduced even further. He emphatically believes that the future airline market lies in lower fares and higher service, bolstered by economical equipment. The rising cost of surface transport and its increasingly uneconomical equipment adds a new factor in the future of air travel. It drives for the revenue of the broad passenger air surface transport, according to Masfild.

• Opening for Nonstop—Masfild, British airfielded airlines are getting a greater opportunity to serve the value of air travel in itself. During the past 18 months the British industry has placed increasing dependence on the service to handle troop movements between the far-flung outposts of the Empire.

During the last 12 months a total of 55,000 British troops were carried by the airlines to Africa, the Middle East and Gibraltar. Official British sources now report that of a short 512 kilometer per man to move troops to the Middle East by air, it was, made, more than the sea saved. The needed troops were (estimated) Despatched by BEA to the West Indies and Singapore and further expansion is in progress as the British government becomes increasingly concerned of the necessity to





## SAC Crippled

- Tornado damages more than half our B-36s.
- And Congress prepares major investigation.

A major investigation into combat readiness of the Air Force loomed this week as the Senate Transportation Committee headed by Senator Lyndon B. Johnson began examining circumstances under which 405 B-36s sustained more than half of its Strategic Air Command B-36 striking force in a destroyed by back high velocity winds at Ft. Worth Sept. 1.

On that date 183 joint B-36 atom bombers were severely damaged and one was completely destroyed by high-velocity winds in the short span of 30 days at Cannon AFB, Ft. Worth, and at the nearby Consolidated Valleys Atomic Plant just across the field from the SAC air base.

■ **Disaster Area**—The Johnson committee will seek to determine why more than half the available striking force of Strategic Air Command was not destroyed in one area at any given time. Air Force spokesmen admitted that concentration of more than half before dollar worth of assets—about the value of B-36 potential at the SAC air base—had placed the command in an unacceptably vulnerable position.

He added that it was extremely fortunate that the mainline damage had been as "act of God" and not that of man-made nature, but in creating a World War III Pearl Harbor. On all Air Force still only that most of the planes would be back in operational service by Oct. 1.

In an official report by Air Force Inspector Al. C. Bryant, Boston, director of inspection May. Gen. Roger Ramsey and Air Weather Service command May. Gen. W. G. Senter, say damages to the part of 8th Air Force (headquartered at Cannon) was denied. The report recommended recommendations of that base and the Convair plant for their fortitude in preventing any further damage to aircraft and installations consequent during the first wind storm.

■ **\$100-Million Loss**—Air Force said that of the B-36s battered at Cannon, 34 were demolished and 71 others were damaged in varying degrees but that owing to the complexity of the aircraft it was impossible to determine the exact dollar loss caused by the storm. However, the Air Force and preliminary estimates indicate that the cost of repairs to the Air Force lacked

ing damage to base facilities would total approximately \$45 million.

The losses did not include damage to 35 other B-36s parked at Cannon as Cannon's runway at the Consolidated Valley plant. Total repair costs for all aircraft involved, Air Force spokesmen will claim to be approximately \$100 million by the time all are returned to operational service.

Most of the damage, Air Force said, resulted when the narrow corner of a back tornado producing winds of extreme violence swept without warning across the B-36 wing at Cannon. The majority of the aircraft received direct wind damage, although some were damaged in a result of flying debris from impact docks and buildings worked in the storm. Several small aircraft based at Cannon also were destroyed, including one fighter plane which was airborne by the storm, and one several hundred feet and smashed into the earth. One bomber was completely destroyed.

■ **125-Mph Wind**—The three-man joint officer team investigating the extent of the damage established the fact that weather forecast concerning the tornado indicated three-dimensional wind gusts of 40 to 60 mph. The Air Force and that winds of such force had previously been experienced at the base without serious damage and that as a result no special precautions were taken. The investigation said that the device for measuring wind velocity was located when the winds reached 41 mph, and that in a result the highest velocity could not be determined although estimates placed it in excess of 125 mph.

The investigation team reported that the 8th Air Force district commander and other officers of the base were on duty at the time of the "convective storm" and that they had taken the "most reasonable action" to minimize the storm damage. The team reported that, in the matter of damage to the base, the wind swept debris and wrecked buildings.



MAPLE LEAF G-19 PACKET

Wrecking the B-36 maple leaf map, a 1944 G-19 taken at Fort Hagerman, Md., on delivery flight. Three G-19s were destroyed, one in Canada Air Transport

ings only a few hundred feet from other buildings which totally ceased damage.

■ **The inside**, they said, developed in a matter of seconds from a dust-storm just as it reached the air base. Although the storm was tracked to the edge of the base by radar, the crew members the experimental apparatus that there was no indication of a developing tornado. Particular of the storm, the team reported, was indicated by the fact wind velocities at Dallas less than 10 mi. away, Helder AFB, Fort Worth, and Andrews, Okla., during the same period did not exceed 20 mph, although winds did reach approximately 18 mph at nearby Ft. Worth Municipal Airport.

## GM Consolidates Engine, Prop Units

Consolidation of General Motors Corp.'s Aeroengine Division at Dayton with the Allison Division at Indianapolis was announced last week by C. E. Wilson, General Motors president.

The Aeroengine Division, which manufactures hydraulically controlled propellers, actuators and other aviation products, will be consolidated in a fifth aviation group under the Allison group along with aircraft engines, tank engine transmissions, bearings and locomotive parts, all under leadership of E. B. Newell, Allison general manager and vice president of General Motors.

Mr. Moore, Aeroengine general manager, and C. C. Paxon, Aeroengine assistant general manager, will continue in their present posts under Newell's direction. The Dayton section branch will be called Aeroengine-Allison Division.

■ **Coordination**—Newell said the consolidation would facilitate engineering development of both engines and propellers through close coordination of

engineers and just one of test facilities at Dayton and Indianapolis. Some parts and sub-assemblies for Allison engines will be produced in part of the Aeroengine facility. The Dayton operation will continue its development of aerospace propellers.

Aeroengine will continue working with other engine manufacturers on propellers designed to meet their needs, while Allison will continue to work with other propeller manufacturers in marketing their propellers with Allison engines.

Higher employment is expected at the Dayton operation in 1955 in production of aircraft engines, Newell said.

## AMC Rejects Plan To Speed Award Data

Dayton—Efforts to speed reporting of achievement in negotiated contract awards are not a step which the Air Materiel Command declined to accept proposed by the Defense Department's representatives.

AMC indicated, however, that attempts will be made to reduce the time between the award and the acknowledgment. From the Defense officials have pointed out that the new processing system (Defense Week Aug. 4, p. 25) is limited to a true award at approximately 60 days per contract. The existing system from a firm which indicates delay along the line in handling the necessary paperwork prior to making the final award.

The National Association of Manufacturers has expressed its opposition.

■ **Present system** is too slow to do any good for subcontractors, suppliers or even prime contractors.

■ **Incompleteness** among the buying sections—some working on bulletins towards the last minute, while the buying contract immediately after date receipt is made, while others refuse to develop new information.

■ **Information on unfulfilled requests** should be made for as rapidly, after determination, as in the case of formally advertised process needs.

Under the present system of reports to the Air Materiel Command, members of staff and field value of the contract are forwarded by Contracting Relations Office at AMC to the Department of Commerce for national distribution in the form of a "Synopsis of Contract Award Information." The time lags are too long.

NAMR proposed a system of sending to Contracting Relations Office an abstract of the low bid as soon as the bidder was proved a responsible contractor. The system declared that the change would involve only a small additional clerical cost.

## Better Break

- Boeing president urges tighter defense planning.
- He cites complexity of planes, increasing cost.

Boeing Airplane Co. president William B. Allen said a plan for better national defense through cooperation and Administration planning and a better break for aircraft manufacturers through:

- **Steady appropriations.** "The armed services have long been forced to operate on a basis of 'last year's plan.'" Yet the B-39 design work started in 1938, but couldn't drop bombs until six years later in 1944, the B-47 was started in 1945 but the first production model flew years later in 1951. Continuity of effort is the first need for improved national defense, Allen says. U.S. plane production went from 3,100 planes a month in March of 1944 to 60 in 1946.
- **Good service contract.** Defense officials have pointed out that the new processing system (Defense Week Aug. 4, p. 25) is limited to a true award at approximately 60 days per contract. The existing system from a firm which indicates delay along the line in handling the necessary paperwork prior to making the final award.

■ **Wages based on productivity** must be the rule, Allen says, whereas in the last years wages manufacturing firms have gained 60% without any corresponding gain in effort. "We should develop wage policies that are as sensitive to work" Labor contracts for 40% of total cost of an aircraft.

■ **Cost and complexity.** Unit cost of planes has to increase because increased complexity is necessary in modern performance. When two planes close at 600 mph, each, their relative positions towards the last minute, while the buying contract immediately after date receipt is made, while others refuse to develop new information.

■ **Information on unfulfilled requests** should be made for as rapidly, after determination, as in the case of formally advertised process needs.

Under the present system of reports to the Air Materiel Command, members of staff and field value of the contract are forwarded by Contracting Relations Office at AMC to the Department of Commerce for national distribution in the form of a "Synopsis of Contract Award Information." The time lags are too long.

NAMR proposed a system of sending to Contracting Relations Office an abstract of the low bid as soon as the bidder was proved a responsible contractor. The system declared that the change would involve only a small additional clerical cost.

with its own legislatures and each with its own requirements for reports from industry. This week alone represents a substantial element of cost in the final product.

■ **More precise estimates.** Low defense contract profit margins are forcing government control of plant investment, since the aircraft industry can't buy up enough the way a normal free enterprise can. Allen points out. He cited figures: The first leading defense contractor's profit per dollar of sales is 25% over the last ten years, with several more from 6% less than 4% profit. The industry is losing money and a better break for aircraft manufacturers through:

- **Steady appropriations.** "The armed services have long been forced to operate on a basis of 'last year's plan.'" Yet the B-39 design work started in 1938, but couldn't drop bombs until six years later in 1944, the B-47 was started in 1945 but the first production model flew years later in 1951. Continuity of effort is the first need for improved national defense, Allen says. U.S. plane production went from 3,100 planes a month in March of 1944 to 60 in 1946.
- **Good service contract.** Defense officials have pointed out that the new processing system (Defense Week Aug. 4, p. 25) is limited to a true award at approximately 60 days per contract. The existing system from a firm which indicates delay along the line in handling the necessary paperwork prior to making the final award.

■ **Wages based on productivity** must be the rule, Allen says, whereas in the last years wages manufacturing firms have gained 60% without any corresponding gain in effort. "We should develop wage policies that are as sensitive to work" Labor contracts for 40% of total cost of an aircraft.

## CAA Opposes Use of Auto Gas in Planes

"Using auto gas for airplane fuel is undesirable," Carl A. McCormack, CAA administration reports in a 10-page pamphlet, "Evaluation of Aircraft Engine Fuel and Lubricating Oils," published by the Federal Aviation Commission in its selection and use.

Kenneth S. Calloway of the CAA Powerplant Division said CAA has not recommended auto gas for use in aircraft, but "undesirable" that auto fuel be used. "There were factors that may tempt people to use auto gas in light planes are:

- **Local availability** of auto gas in rural areas.
- **General shortages**, such as during spring of 1946.
- **Price differential** of about 25 cents in some fuel used for a lightplane.

But the CAA report lists several reasons for its opposition to use of auto gas in aircraft: danger of vapor lock, uncontrollable airlock condition, and moving components and vibration. Result can be any loss of engine action due to vapor lock, or any loss of control of plane, fueling, run-cracking and vapor trouble.

A recent letter to CAA from a plane

sworn in Lysbong, Va., when it arrives into graduate work to be accepted due to its having no land in a CAA. However that although that would avoid the evils of excessive land contact, American Oil Co. still does not recommend use of that type gas in aircraft engines.

Low-powered planes than the 55-hp. Cule to the 115-205 hp. Beech and Navion that generally specify 50 Grade aviation gas, while the 206-hp. Cessna 441 is specified in the Navion II requires 91/98 Grade.

## Pressure Forces AF Action on Spares

Under congressional pressure to reduce spending on spare parts, engines and equipment, the Air Force has set up a committee at Wright-Patterson AFB to recommend appropriate actions.

Headed by Harry King of Bridgeport, Conn., president of Airman Link, Inc., the committee expects to make recommendations continuously to reduce USAF's current year program for spare procurement and to make final recommendations regarding the best system in the fall of the year. King has a broad business background, including experience in oil, steel, copper, utilities and in wartime government agencies. He has no previous experience in aviation.

► **Funds Reduced**—Pressure from Congress to cut expenditures for spares was generated by Undersecretary for Air Research & Materiel's testimony that "66 cents of every dollar spent on aircraft equipment goes into spares." And this is an area in which we don't see much "economizing" to economize.

The House Appropriations Committee cut funds for the 1953 fiscal year for aircraft procurement by \$593 mil-

lion and the Senate Appropriations Committee by \$648 million. Congress felt that USAF could make the savings by reducing procurement of spares and that the cut would not have to be applied to complete aircraft acquired for the 14-day program. The funds were ultimately returned to give USAF time to re-evaluate its program.

But the 1953 fiscal year, USAF has committed \$5.5 billion of its procurement funds for initial spares, compared with \$6.3 billion for complete aircraft. Last fiscal year an estimated \$4 billion was obligated for initial spares, \$4.6 billion for complete aircraft.

► **Background**—Congress did not authorize the Naval Aviation spares program this year. But it probably will next year, as members seek new ways to economize on the defense budget.

USAF presented that background on its spares program.

► **After World War II**, USAF went too far, experts later proved, in disposing of 50,000 aircraft that were on hand and spares to go with them.

► **With the outbreak of the foreign aid program and the outbreak of Korean hostilities**, USAF found itself short on spares for its World War II types "and we are now buying certain spare parts to support such aircraft in the B-36, B-28 and F-51 in Korea at comparatively high costs."

► **Procurement money** was so restricted during the five years following the war that spares purchases were held to a minimum and the question of possible overprocurement was "academic."

► **No planes procured since 1945** have been declared obsolete on the active USAF inventory.

► **Six models** are needed for a phantom over the next year or two. These are, with an estimate of the value of the spare engine and parts inventory which would become subject to disposal: Grumman SA-16, \$14 million; Cessna LC-126, \$53,698; Piper L-4, \$404,375; Republic F-47, \$51.5 million; North American F-52, \$34 million; Beech T-11, \$18.9 million.

The Boeing B-17, USAF reported, is programmed for use through mid-1955. Spare parts inventory to support B-17s include parts valued at \$20 million and 750 Wright R3320 engines representing an investment of \$67 million.

## New Air Forces

(McGraw-Hill World News)

Bogota—Aviation, the Colombian government-sponsored carrier, has lowered its freight rates since 1952 and simultaneously raised passenger fares approximately 10%. Beginning Oct. 7, the carrier will begin a tourist operation to New York at fares 50% lower than regular service.

## EEMCO technical bulletin

High Performance - Compactness Achieved in new EEMCO Motor for Missile Application



This new, 3 h.p., 135 V DC motor designed by EEMCO provides 12,000 r.p.m. at continuous duty. An internal spline drive with its armature shaft allows for a close coupled, extremely compact assembly, to drive a 400 cycle, 3 phase permanent magnet alternator. Proven in constant output speed with varying conditions of voltage and load. Unit is equipped with radio noise filter.

EEMCO designs for the future in cooperation with the leading producers of aircraft and guided missiles. Our specialty and responsibility is to provide practical solutions to the motor and motor problems of tomorrow's aircraft.

ELECTRICAL ENGINEERING & MANUFACTURING CORP.

4615 WEST JEFFERSON BOULEVARD  
LOS ANGELES 16, CALIFORNIA



## SWEDISH DELTA RESEARCH PLANE FLIES

Designed and built in only 18 months, the first Delta-218 delta wing is now undergoing flight tests. Compared with other delta, the 218 has wings of extremely low aspect ratio. The craft is powered by a 1,850-horsepower Armstrong Siddeley Adler radial five

jet engine. Center of gravity can be modified by pumping liquid between the two tanks in nose and tail. It is especially in proving the way for design of a larger all-weather delta-wing fighter being considered by the company.



## Why British Push the Delta Wing Design

- You can get low wing loadings favored in Britain, without high drag, only with swept or thin wing.
- But thin wing production creates new problems. A filled-in swept wing meets all demands.

By David A. Anderson  
(Rt. Cable to American Union)

Farnborough—Britain didn't get there first with the delta wing aircraft, but she got there with the *quest*. And that credibly considered determination to stress the triangular configuration will have a profound influence on British aviation for years to come.

Four different triangular aircraft flew at the Society of British Aircraft Constructors display this week only as accident prevented a fifth from showing.

With these and its more delta

layouts to be in various stages of development here, a wide range of military types has been covered including guided missiles, interceptors, trainers, all-weather fighters and large bombers.

Interest in the topic heightened when Avro announced receipt of a production order—initially estimated at 25 aircraft—for its model 698, the largest delta bomber. And in the background there is talk of a delta wing transport.

### The Planes

Hottest participation in the delta program comes from Hawker Siddeley

Group companies. They produced the star of the show—a gleaming white Avro 698 (photo above)—and its two smaller siblings, the little and 707A and the blue 707B. Avro's 698 bomber first flew Aug. 30. Outside of being wheel-less (during the flight was uncontrolled and Pilot Robert Falk spent 35 min in the air.

The 698 is about three times the size of the 707 series; span is estimated at 106 ft., length 129 ft. Proponents are a quarter of Rolls-Royce Avons but Bristol Oblique Injectors are to be the engines in the production version.

► **Lay-out**—Control system of the big bomber is like that of the 707, but the elevator is more powerful. Trailing edge surfaces are split: upward portions are elevators, outward portions are flaps. No ailerons are used, and there is no horizontal tail. In one air groupings close in by the fuselage; an outboard wing leading edge like those of the 707A, resembles a mailbox, dot with a boundary layer separator.

From These (Avro 707A, top; 707B, below)



Came This (Avro 698 bomber)





AVRO 707B, in this attitude, shows clearly how it was used as a flying scale model to test design features of the...



AVRO 685 bomber. While configuration of two planes is generally the same, the 707B has air intake at top rear of fuselage.

relogist. Nosewheel has dual tires, main gear is bogie type with eight wheels per leg.

Eight air brakes are fitted, four above and four below the wing, paired on each side. There is no indication of instrument or provision for gauging rudder, hinting that perhaps the British are going to depend on speed and altitude for protection.

Brake has a extremely long and quite wide, providing large capacity. The cockpit equipment includes ejection seats for the crew.

►Power and Personnel—Gloster Air-

craft, another company in the Hawker Siddeley Group, demonstrated its G.A.5 Javelin, world's first twin-engine delta fighter. Designed for all-weather interception, the Javelin is jam-packed with avionics equipment. Two dual-engine Siddeley Sapphire will thrust the plane along at supersonic speed.

Gloster claims the plane is more maneuverable at lower speed than any fighter since the Spitfire era. This characteristic, coupled with the carrying capacity and the development potential in both airframe and engine, led Gloster to state that "the Javelin offers

infinitely more than any other fighter." The Javelin is about one-half the size of the Avro bomber, with a span of 32 ft., length of 37 ft. and overall height of 17 ft. It mounts a horizontal tail, in a guarantee of spin recovery, on a low-aspect ratio vertical fin and rudder. A large fining at the top of the fin houses a drop parachute.

►How They Fly—Robert Falk and Bill Waterman, test pilots of the 656 and Javelin, respectively, agree that if a pilot can fly the Avro (a small twin-engine Avro trainer) he can fly a delta. Falk has been flying the big bomber



W1AG PLAN at 6000 inches is clearly evident in this view. Tailboard control surfaces are deflected, airfoiled are retracted.



W1AG PLAN at 6000 gives deceptive appearance of weakness. Dark lines show leading edge set in brakes.

alone, although there are accommodations for other crew members.

Judging by the Farnborough exhibition flight characteristics of the delta are normal and maneuverability exceptional. As the show moved through successive days, and Falk and Waterman began to let out their mounts more, performance was even more impressive. Foreign visitors noted how the big bomber ran away from the little delta and gaped when Waterman banked the Javelin off the runway in a tight turn after takeoff.

►Others in Works—Avro now is de-

veloping a series of two-seat delta trainers to familiarize pilots with the capabilities of that geometry. Not as well publicized as the Hawker Siddeley Group delta are experimental deltas built by Fawcett Aviation and Rockley Park.

►Fawcett announced its FDE—a development project leading to a rocket-propelled interceptor with ramp landing—just before last year's SBAG display but did not fly the craft then nor this year. In the firm's static exhibit was a small piston, underpowered, autopilot-controlled aircraft with the general lines of the FDE.

►Rockley Park's FK11, which gave a convincing demonstration of flight performance last year, failed to show this time. The firm's newer FK120, basically a FK11 with the addition of a horizontal all-reversible tail mounted on a modified vertical tail, crashed a few days before the display.

## The Theory

Behind the British industry's apparent preoccupation with a single idea lies logical thinking which evolved the delta as the type most fitted to do one

**ANNOUNCING...**  
**more power in a smaller package!**



*Shown approximately stated size*

**MIDWESTERN MODEL 9 TORQUE MOTOR**  
**A Precision Linear Electro-Mechanical Actuator**

Midwestern's new, powerful linear actuator was designed primarily to drive pistons in hydraulic servomechanisms. However, it is being enthusiastically accepted in many engineering fields as a basic transducer to convert a few watts of power from an electronic amplifier to a linear mechanical motion with considerable force. For complete engineering details on this new, small, powerful Model 9 Torque Motor, write or wire Midwestern Geophysical Laboratory.

**SPECIFICATIONS**

• Multiplication Force	9.5 lb
• Stroke	$\pm .015$ in
• Weight	19 oz
• No-load Natural Frequency	425 cps
• Coil Resistance	3400 ohms (each)
• Solenoid Current	20 ma
• Differential Current (max.)	40 ma



3401 S. HARVARD AVE.—TULSA, OKLAHOMA



**Three Views**

of Glaser Javelin show the general lines of the delta fighter which will be shown at the NACA show with the Aero delta bomber. (Photos of bomber on preceding page, more photos of Javelin following. Story on both planes begins on page 22.)





Ever  
see  
a  
raw  
egg  
drop  
25  
feet  
and  
BOUNCE?

**CRANELINER**  
Craneliner is 4 times as resilient as craped wadding — yet costs you no more!

Raw eggs dropped 25 feet onto a 2" pad of Craneliner don't break—they just bounce! "Operation Egg Drop" dramatically shows Craneliner's 300% greater compressive resistance. Army, Navy, Air Force and up to 5,000 firms now using Craneliner get 4 times the resilience for the same money, or save by adding using for less. Easier way, freight costs are reduced, for Craneliner weighs less for any given craped condition! Craneliner meets or exceeds Fed. Spec. UO-CAL, has shock absorber capabilities! For full facts, send the coupon today!

**THE CRANLIN BROTHERS COMPANY**  
Dulles 24, Connecticut • Est. 1917  
Please give the full facts on Craneliner.

NAME \_\_\_\_\_  
FIRM \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_



JAVELIN turns and climbs at will in attaining display of its maneuverability.

test jobs. Aero planning began in 1947 when the Air Ministry and the Ministry of Supply asked the company to study specifications for a bomber design. These studies convinced Avro that the delta layout was the only shape which would meet the tough requirements of the specifications.

• **Problems and Answers—Generally,** Avro chose the delta in the answer to the problem of producing a high speed, long-range lead carrier. Specifically, most arguments for the type stem from other manufacturing problems in aero dynamic requirements.

Furthermore, British aircraft designs are built around low wing loadings. Even jet engines and high-speed flight have not shaken them from that position. But low wing loading means long wing area, which is conventional airplanes means high drag. There is only one way to reduce wing drag, decreasing area changes and use of special devices make a thinner wing.

Sweepback, which reduces aerodynamic thickness in direction of flow, is one way to do the job, a very fine straight wing is another. But the wing has to be strong to take loads of high-



BUSINESS END of Javelin carries radio and armament. Solid tail, opened behind pilot's canopy, is exclusive for solo operation. Plane is released through ejection seats.



JAVELIN TAIL design reflects special problems of delta craft. Horizontal tail, needed for maneuverability, has controllable jacking and normal elevators.

# Now Available



**AUTO-LITE**

## Silicone-insulated Wire

Auto-Lite Silicone-insulated Wire is immediately available for use on civilian products—where extreme temperature

ranges occur. Check these advantages of Auto-Lite Silicone-insulated Wire for both high and low-voltage applications.

- ★ Withstands extreme temperature ranges— from  $-60^{\circ}\text{F}$  to  $400^{\circ}\text{F}$ .
- ★ Good retention of electrical properties.

- ★ Highly resistant to bacteria and fungi.
- ★ Extremely good weather aging qualities—does not become brittle.

Auto-Lite has the facilities available to accommodate your largest demands for Silicone-insulated Wire. Inquire today!

**THE ELECTRIC AUTO-LITE CO.**  
Wire and Cable Division  
P.O. Box 1000 • Houston, Texas



Circle 10 on Reader Service Card  
© 1958 The Electric Auto-Lite Co.

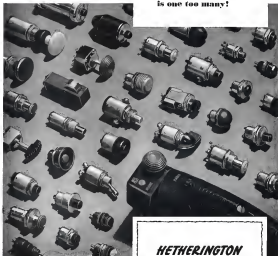
# AUTO-LITE

Wire and Cable





designed for jobs  
where one failure  
is one too many!



## HETHERINGTON SWITCHES

In the aircraft field, Hetherington special switch types are available for:

FIRE DETECTION INDICATORS • TWIN TAIL CONTROL  
SEAT POSITIONING • AUTO PILOT RELEASE • TANK  
JUNCTION • MICROPHONE CIRCUITS • ALARMS  
ISOLATION SWITCHES • EQUIPMENT TESTING • FIRE  
DETECTION TEST • CANOPY RELEASE • SEAT EJECTORS  
AUTO PILOTS • BOMB OR BUCKET FILING  
RECHARGING and many other uses

**HETHERINGTON, INC.,** Shreve Hill, Pa.  
(West Coast Division: Ellettsville, Wash.)  
(Other Divs. Call)

## PRODUCTION



NAMR BOARD, left to right: Herbert C. Thomas, Everett D. Fier (chairman), John E. Epps, Paul H. Henry, and John A. Lombard



NAMR OFFICERS: Secretary Ruth Gerbode, President Louis J. Scollay, Treasurer Robert G. Siff, Vice President D. D. Reuland who stands when photo was taken.

## Growing NAMR Broadens Scope

Dayton representatives grow, hardly a year old and already largest of kind, now seeks national role.

Favored a little more than a year ago in Dayton to handle concerns problems of company representatives of the Air National Council, the National Association of Manufacturers Representatives already is the largest organization of its kind in aviation and is holding far recognition as the spokesman of representatives of all types of industries. Its membership is approximately 218 and includes representatives in Washington, New York, Cleveland, Chicago, Detroit and the West Coast as well as in Dayton.

Although its future aims are national in scope, NAMR right now is still

pretty much of a Dayton proposition. That is where most of the aviation business is done and that, naturally, is where most of the problems lie. NAMR's job, and its future growth have to be assessed against the background of the role of a representative in Dayton.

▶ **What a Rep Does—**Wright Field representatives, whether representing large or small business, perform the following functions for their clients: ▶ Select military products suitable for manufacture by client. ▶ Register fees on source lists. ▶ Keep abreast of new developments.

▶ Maintain liaison with aircraft project engineers.

▶ Secure all new procurement, and purchase bid forms, specifications, and drawings if not already forwarded to firm.

▶ Deliver into projects purchase history of items to guide firm in bidding. Advise firm on bid procedures.

▶ Follow up bids and proposals, and advise firm in status.

▶ Find out sources for purchased items, and find suitable subcontractors.

▶ Advise client, and assist in any contract negotiations.

▶ Advise client regarding accounting procedures in regarding costs for parts, subcontractors and expenditures.

▶ After contract is obtained, maintain liaison with buyer and project engineer regarding any subsequent changes, production problems, inspection problems, etc.

▶ Follow up qualification test samples in engineering laboratories.

▶ Expedite payment of invoices by finance office.

▶ Keep tabs on large purchase contracts awarded, regarding possibilities of obtaining a subcontract.

▶ Keep firm name fresh in buyer mind, to avoid being overlooked on any procurement.

▶ Carry to higher authority an appeal on any military decision made at lower levels, which seems unjust or prejudicial to client's interests and the "best interests of the Government."

▶ **Legitimate Business—**Contrary to all common prejudice in several Washington circles, the Wright Field representative is not an influence peddler, confidence man, or political fixer, for the reason that there is very little politics involved in most Air Force procurements.

On the contrary, he performs a legitimate service; otherwise industry would not maintain his services.

He performs two functions. He is supposed to keep his eyes open for new business, and he is supposed to advise the business already on hand.

Representatives' fees generally are based on the size and bidding activity of the company. On this score, you generally get about what you pay for. Hundreds of reps located in or near Dayton either have years of experience in procurement, engineering or supply with the Air Force, or in manufacturers' organizations.

Many possess engineering degrees of one type or another. But the principal thrust in made in a general survey of the many solicitations attended to purchase of equipment and services by AMC.

▶ **New Statute—**Two recent developments have pointed up a new status for reps.

▶ They are recognized legally by the Recognition Act which provides that

## "special" treatment for standards



No presentation of Cooper production would be complete without an exhibit of current AN and NAS standard threaded aircraft fasteners. This company is a large producer of "standard" as well as of all types of quality fasteners. Many of today's "standards" in

fact, we first worked on when they were "special." This wide variety of production is also responsible for creating the habit of accuracy which is indispensable to mass precision production. Standards get "special" attention at Cooper — it's standard.

Cashy P-41  
request including  
a list of current  
MIL, AN, and  
NAS fastener  
specifications



# COOPER

Precision Products

WEST CHESTER, PENNSYLVANIA, 19380 • PHONE 6-3473

individuals as well as companies can be subject to reorganization. Any representative who needs \$25,000 or more from his activities on governmental contracts is subject to the terms of the act. • Repeal in general an act in growing esteem by AMC officials. Certainly part of this feeling is due to the National Association of Manufacturers Representatives. Various members of NAMR recently were asked by top AMC officials to offer advice whenever asked by new government agencies, particularly officials needed to advise duty. Although most of these officials will have had past government experience, standard changes among their previous firms may have kept them while they hunk into the job again.

• **Feeling Vague**—One representative of NAMR was the establishment of a policy list for new and existing firms across the highway from the Reception Center at Area B. The list is adequate in size, restricted to new and construction and close enough to the Area B entrance to allow a long-term relationship. Another recent development was the decision to post late bids in the Construction Reference Office. The practice had been stopped, without a hearing on new and construction bids. During subsequent meetings, many legal bids are to be removed of good looking. If the postmarks indicate that the bid should have been delivered to AMC under normal mailing conditions, it is declared to be an acceptable late bid.

But during the suspension of the posting of late acceptable bids, a responsible bidder could attend the bid opening, hear his bid read as low, and yet not know that he would get the bid because of the possible late bids which might be under his signature. After a complete exchange of opinion on the practice, the posting of late bids has been resumed.

Although reorganization at NAMR is still mainly a Defense proposition, many outside officials believe and some business firms are to be heard for meetings (especially the first Wednesday of the month) the department is in the Vice-Close-Hold, Division.

• **Officers**—This year's officers:

- President: Louis J. Scallan
- Vice President: D. D. Brubaker
- Treasurer: Robert C. Sill
- Secretary: Miss Ruth Lechman
- Board of Directors: Everett D. Fair (Chairman), Robert C. Thomas, John E. Epps, Paul H. Hurrey, John A. Lombard
- Committee: AMCWAC (American War Production Council) and other members: Grant V. Dillman, Francis D. D. Brubaker, John, Everett D. Fair, members: Kurt W. Schmidt, Paul J. Kondrat, John, and others. (Note: C. Decker)



for temperature testing  
in the laboratory  
or in the plane...

Combined with the same case as our aircraft temperature indicators, these instruments bring "accuracy" to the test engineer.



MODEL 107V, shown, has been used successfully by leading naval air bases for "on-the-spot" testing of "on-the-spot" engine oil temperature. It features a 1/2" hand design with an 8" dial diameter and a 1/2" hand design with an 8" dial diameter. It is made in rugged metal housing, with stainless steel, aluminum material.



MODEL 107S, also shown, has been used successfully by leading naval air bases for "on-the-spot" testing of "on-the-spot" engine oil temperature. It features a 1/2" hand design with an 8" dial diameter and a 1/2" hand design with an 8" dial diameter. It is made in rugged metal housing, with stainless steel, aluminum material.

MODEL 107V, also shown, has been used successfully by leading naval air bases for "on-the-spot" testing of "on-the-spot" engine oil temperature. It features a 1/2" hand design with an 8" dial diameter and a 1/2" hand design with an 8" dial diameter. It is made in rugged metal housing, with stainless steel, aluminum material.

Provided with white scale, black markings and pointer on, with 1/2" hand design, 1/2" hand design and 1/2" hand design. For use with and 1/2" hand design, 1/2" hand design and 1/2" hand design.

**THE LEWIS ENGINEERING CO.**  
Manufacturers of General Instruments  
—Manufacturing Offices for Aircraft—

HARTFORD, CONNECTICUT



• SELF-STIK



## HANDS a roll of TAPE

TO SAVE YOU MONEY!

- Self-Stik  
Waterproof  
Cloth Tapes
- 14 inches
- Making Tapes  
for every  
application
- Unlimited  
Cloth Tapes
- Mystik  
Printer's Ink
- Mystik Special-Mark
- Mystik Seal-Mark
- Mystik End-Pull  
Indicator

The most expensive tools in your plant are hands. Daily they perform thousands of operations. But how many of those operations can be performed with MYSTIK Brand Tapes? A roll of "self-stik" MYSTIK Brand Tape is really a roll of hands... countless fingers that grasp, grip, hold... performing countless holding jobs in every phase of operation—storage, fabricating, assembling, shipping. MYSTIK is the world's largest maker of "self-stik" cloth, waterproof tapes... available in dozens of colors... makes a full line of cloth and masking tapes and adhesive products to help you cut operational costs. Write for information and samples.

© North Atlantic Division, 1951

Trademark: North Atlantic Division

MYSTIK ADHESIVE PRODUCTS, 3643 NORTH KILDARE AVENUE, CHICAGO 39

### Special Jobs

require a Specialist's Attention



FROM ADVANCED PhD AND/OR MSc DEGREE WITH RELEVANT EDUCATIONAL SERVICE  
IN AND FROM CANADA, BRITAIN, GERMANY, SWITZERLAND, AND PORTUGAL



1992-93 FISCAL YEAR - BUREAU OF THE BUDGET AND FINANCE, BUREAU OF THE TREASURY - COMPTROLLER GENERAL OF THE UNITED STATES

## Insulation

[illegible]

Refused to be eaten in a variety of forms today when your high triglyceride problems. Attack the ad in your kitchen and send today for this limited time offer.

**THE H. L. THOMPSON COMPANY**  
 1731 CONGOVA STREET  
 LOS ANGELES 7, CALIF.

## High Production Credited to Subs

A thirteenfold increase in output of systems restoration and other precision devices compared with pre-Korea production is reported by Echipe-Pomier division of Breda Aviatex Corp., Interlaken, N. J. Fully one-third of this increase is credited to the efforts of the firm's 112 subcontractors.

It is estimated that sales will be topping Felipe-Ponsa's own production by the end of the year. Some of the sales formerly made hitting out classes, fishing rods and reels, coated-able water boots, vacuum cleaners and other consumer goods. Now they're helping him out with antennas, boats, aircraft, navigation systems, air-to-ship indicators, fuel flow meters and other critical items.

The Bender division's government building is \$245 million. Currently the firm is staffing 22 complete unit sub-contractors, 118 parts sub and about 2,000 vendors. Approximately 85% of these firms are in the small business category.

Kelpas-Pomer credits part of its success with outside contractors to its team of expert craftsmen, with 10 to 15 years job-level shop experience, who work closely with the subcontractors in demonstrating the required production skills and know-how.

Current E-P output is scheduled to **more than double** over the next two years and reach a rate 15 times that of one Korea.

## PRODUCTION BRIEFING

► **Northrop Aeronautical Institute.** Northrop Aircraft, Inc., Hawthorne, Calif., has been awarded a contract by the Ordnance Corps to set up a training school for guided missile personnel at Rockwell Arsenal, Huntsville, Ala.

• Pacific Aerospace Corp.'s China C44, basic will overhaul approximately 100 Douglas C-54s under USAF contract. Initial dollar value is \$2.4 million, but will probably be increased to \$3 million.

► **Fluor-Tech Co.**, Los Angeles, has started construction of a plant in London, Ontario, Canada, to house a new facility to be known as Proton Tool of Canada, Ltd. Building is scheduled for completion in September.

► **Span Aircraft Co.**, San Diego, has received \$7-million worth of orders for airframe and engine components bringing its backlog to more than \$71 million.



The newest addition to the growing Vol-Sban family of fasteners is one of the aircraft industry's latest developments . . . the high torque 12-POINT EXTERNAL WRENCHING BOLT. Here are its important advantages:

- ★ Reduced weight for equivalent strength allowances
- ★ Permits higher torque loads in installation and removal
- ★ Less stripping in removal of seized bolts
- ★ Can be used with standard socket wrenches

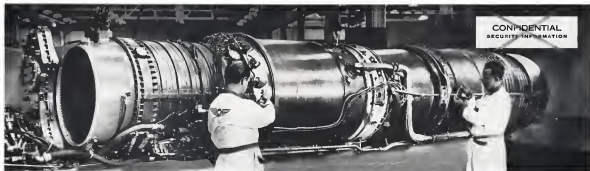
Pending release of National Standards, Van-Elan is ready to furnish 12-Point Extensile Weenling bolts to your specifications or to our own drawings.

# VOI-SHAN

**MANUFACTURING COMPANY, INC.**  
8443 Hesper St., Culver City, Calif. • TElms 9-5321







## U. S. Navy and Westinghouse reveal world's most powerful jet engine



F4D "Skystar", built by Douglas, is being prototype-tested with an earlier model of the Westinghouse J40. Production versions will be powered by the new J40 or by later developments of this engine.



F3H "Demon" will soon be in quantity production. It was especially designed by McDonnell to fully utilize the tremendous thrust of this and the even more powerful Westinghouse J40 engines of the future.

The United States Navy and the Westinghouse Electric Corporation have just qualified the world's most powerful turbojet aircraft engine . . . the J40. It develops more than 25,000 horsepower at flight speeds. The new engine has successfully completed the Defense Department's grueling 150-hour qualification test and is now approved for quantity production.

This single engine is two and a half times as powerful as the combined four engines of a B-29 Superfortress. In weight, however, it is only about 3500 pounds . . . less than that of one of the B-29's engines and propellers. The new engine is twenty-five feet long and about forty inches in diameter. It produces more thrust per square foot of frontal area than any other turbojet. Like all Westinghouse engines, it is of the axial-flow or straight-through design.

As delivered to plane manufacturers, for production aircraft, it will be the first engine to provide constant speed drives for airplane accessories as an integral part of the engine . . . providing substantial savings in plane weight and space.

Two new Navy fighter planes will be powered by this new jet engine which was designed by Westinghouse in co-operation with the Navy Bureau of Aeronautics. These are the McDonnell F3H "Demon" and the Douglas F4D "Skystar". Even more powerful versions of the J40 are being developed for these and other aircraft.

Westinghouse, leader of the first American-designed jet engine, has been working with the military services on turbojet design and development since the day after Pearl Harbor, instead the glamour of these jets is the intensive effort of hundreds of scientists and engineers. Progress in jet propulsion is not easily made. What seem like insurmountable obstacles sometimes arise. Like other companies, however, Westinghouse has persevered and successfully met such situations.

Westinghouse is investing millions of dollars and man-hours to help keep American jet-propulsion leadership. Jet engines are produced at the South Philadelphia and Kansas City plants of Westinghouse. Westinghouse Electric Corporation, P. O. Box 888, Pittsburgh 30, Penna.

J40-1

YOU CAN BE SURE...IF IT'S  
**Westinghouse**



**Darnell  
CASTERS  
&  
WHEELS**

**THEY PAY  
FOR THEMSELVES**



**Nearly 4000  
TYPES of  
CASTERS  
& WHEELS**

• Save Money,  
Floors, Equipment  
and Time by using  
DARNELL Casters  
and Wheels... Always dependable.

**DARNELL  
CORPORATION, LTD.**

*Free  
Manual*

OWHEEY, (Los Angeles County) CALIF.

89 Walker Street, New York 12, N.Y.  
34 North Cramer, Chicago 6, Illinois



ARTURIE SPINDER doll press is transferred to new location at North Haven P&WA plant after quick trip from East Hartford.

## P&WA's Move-and-Produce Plan

A new plant for production of piston-rod parts is joining the finishing facilities at Pratt & Whitney Aircraft engines. This latest move is P&WA expansion to at North Haven, Conn., and is a repeat pattern for the moving efficiency demonstrated previously in new plant setup at Southington, Conn. (Aerospace Week Feb. 19, 1952, p. 21).

Quick Timing—North Haven is a maintenance, stock and produce release. As soon as Service dies its machining, production machinery is cut from established lines at P&WA's East Hartford facility, a few hours later they are spotted at the North Haven factory, with sublight, electronics and plasmers supplying the finishing and final touch.

Where the machine is in the middle of an engine part job at East Hartford the stock is moved right along with the machine and finished in the new location.

Plant Data—While the North Haven plant output generally will be confined to P&WA's piston engines, turbojet production here is still a possibility. Even now, one end of the shop has been set aside as a short metal facility where parts for experimental jets will be fabricated.

Plant area encompasses 700,000 sq ft, with 500,000 sq ft for production. The setup will accommodate 15 departments.

Machinists took involved in setting up the new plant total 1,328. First production machine was installed Feb. 2 and first work was sent in the new plant this week. The Cranfield department had been scheduled for the move, it tested to begin operation in October. Up to 4,000 employees are being transferred or hired and trained. Leroy P. Doherty, who previously headed the

Southington operation, is plant superintendent at North Haven.

Transferable—Here, an aspect of the close timing the move to North Haven involved.

Completion of maintenance and test preparation in service machines.

Drawing department layout (detail plans—exact spotting of all machines, desks, tables, benches and workflow on equipment).

Making plant floor to correspond with layout blueprints.

Transportation of machinery, equipment, raw material and assembled parts.

Spotting machinery and equipment so that subsequent installations won't be hindered.

Machinery installation and test runs made for checking.

Commencement of manufacturing operations.

Progress of the closely controlled move plan stresses one prime objective—that the move won't interrupt shop production in the department shifted to the new plant.

## Frauenthal Merges

Kardon Engineering Corp., Maple grove, Mo., has bought A. Frauenthal Inc., makers of large metal band-passon cylindrical guides and bearing and turning machines. The Frauenthal company was the initial head office of Kardon's founder, A. Harold Frauenthal. It is expected that management, engineering and production facilities will be integrated to best efficiency under the merger. Total employment of the two enterprises is slightly less than 500. Kardon Engineering brought out a new small grinder with table size from 30 to 40 in. diameter.

## Fairchild Flying Boxcar Uses 32 Thermoswitch Units



IN THE G-119 FAIRCHILD "FLYING BOXCAR," hot air from the engine exhausts and provides air conditioning for wing and tail surfaces. Right wing heaters produce the hot air which must be circulated at a constant temperature. That job is effectively handled by 32 Fenwal THERMOSWITCH units, one for each heater.



QUANTUM PRODUCTION of Fenwal Aircraft Heater Controls on shown in this picture is accomplished by well-trained technicians who make up this assembly line. Their skill is further up by high capacity control methods which include X-ray inspection. Advanced and efficient production facilities keep all Fenwal THERMOSWITCH units meeting increasing quantities.



ORDERLY AFTER TESTS of a series of outside Fenwal THERMOSWITCH units have been passed by Flying Boxcar for steady three years. Fenwal's proven, time-tested performance, simple design and low cost. Time Proven Thermoswitches tested devices are especially developed for applications subject to severe environmental and operational conditions.



DETAIL VIEW of Fenwal THERMOSWITCH model shown enclosed electrical contacts. The temperature-sensitive shell expands or contracts, thereby with temperature changes, thus making or breaking the contacts. Fenwal units are compact, highly resistant to shock, vibration and extreme temperature conditions. For complete data on these and other Fenwal controls, contact with FENWAL, INCORPORATED, 120 Pleasant Street, Ashford, Mass.

**Fenwal**

**THERMOSWITCH®**

Electron Temperature Control and Detection Devices

**SENSITIVE... but only to heat**

# What every pilot should know about MICRONS

(Psst! What you don't know can hurt you!)

"And what," you ask, "is a micron?"

Answer: "Micron" has two definitions, and you'll want to know them both—the first to acquire your funds, the second to keep out of trouble. Here they are:

1—A micron is a measurement of length. Just remember that 25,000 microns equal one inch—and then take a few more. Point now on, as your longest flying technique, don't put any "micron" when you can say "1,689,164,800 microns." The boys will be amazed.

2—A micron, chemically speaking, is a particle having a diameter of 0.00001 inch. Engine manufacturers want that particle larger than 10 microns in diameter can be ingested to your engine. Four particles of that 10-micron size would have to get together before you could even see them with your naked eye, even if you have CAA physical shows that you have 20-30 vision.

But when dust (visible particles) get into your engine—much out! They can cause damage in under a second. They could even cause engine failure and a forced landing.



How do they get in?

They get into your engine with the gasoline—regardless of the brand you use. No matter how carefully it's mass poured from delivery to storage, gasoline can't help pick up up airborne dust particles, including sand and rust.



How to trap the little rascals

How can you trap these particles—keep them out of your engine? Not with the old methods. And certainly not with ordinary filters. The only solution is to force the gasoline through specially designed filters—see ahead of the problem here—before it goes into your tank.

So that's exactly what Gulf is doing for you. Gulf has created three on its Aviation Gasoline dispensing equipment, designed to completely remove all particles 10 microns in size or larger. From now on, for the sake of your engine and your own safety, go GULF—no gasoline that's injury close.



Gulf Oil Corporation...

Gulf Refining Company



your assurance of "REFINERY CLEAN" Gulf Aviation Gasoline!



MICRON FILTERING on Gulf Aviation Gasoline dispensing equipment...



NOW... to a micron-wise audience, Gulf announces...



# AVIONICS

## New Ignition Better, Yet Cheaper

Scintilla TLN-10 for jets is not only more effective, but is lighter and simpler than its forerunners.

By Philip Kline

Boeing's Scintilla Magneto division has achieved the familiar aviation trend of obtaining improved performance at the expense of weight, complexity and cost. Its newly announced model TLN-10 jet engine ignition weighs only 7 lb, but gives more engine starts than former models under adverse conditions, including frosted or ice-caked plugs.

Here's a comparison which shows how favorably the new ignition stacks up against the previous model TEN ignition. Scintilla produced for the Alouette III helicopter used on F-105 and other F-105.

- Lighter weight: 7 lb vs. 35 lb.
- Higher voltage: 10,000 v vs. 5,000 v.
- Lower voltage: 1,000 v vs. 15,000 v.
- Fuel pump: Capable of firing plug with 10,000 voltage; puts in 5,000-volt maximum for the TEN ignition.
- Lower cost: Roughly \$550 vs. \$1,000.
- It looked like it, but, subject: ignition design looked like a soap compared with previous problems associated with piston engines.
- Critical timing of spark to cylinder position was eliminated.
- Jet ignition required only intermittent, once the jet burner was ignited, the engine became self-sustaining except in the event of flame out.

But it didn't take the military service and aviation designers long to realize that jets had their own peculiar and extremely difficult, ignition problems.

- Jet Ignition Problems—Unlike the piston engine where ideal fuel-to-air ratios exist under stable conditions, the jet ignition design found itself being fuel to ignite a very cold and over-rich fuel-to-air mixture making just the spark plug at speeds of 500 ft/sec and higher.

A delay in engine "light off" permitted unburned fuel to accumulate. When finally ignited, this extra fuel gave a "hot start" which often damaged turbine blades.

On a few such fuel had entered the burner, it had to be closed before a new start could be attempted. (This latter problem has been at least partially solved now by automatic engine controls going into use on newer aircraft.) Furthermore, fuel and moisture wetted



Low cost, light weight Scintilla TLN-10 jet ignition provides better spark.

the plug, or carbon accumulated in the plug, providing a low resistance (leakage) path for ignition energy. • New Approach—Using an adaptation of piston-engine ignition technology to meet its then current needs, Scintilla set out to find a brand new approach to the special jet ignition problems. The search was handicapped by the fact that the classic spark ignition process is not too well understood from a theoretical standpoint; there are at least two conflicting theories.

However, Scintilla established two criteria for satisfactory spark ignition which were competitive with either theory. These were:

- Fuel-air mixture must be mixed to some critical temperature.
- Ignition, when it occurs, takes place in less than 5 microseconds after the spark reaches its maximum power level.

Scintilla also concluded that the amount of energy (quantity of heat)

in the spark is less important to rate of spark ignition than spark duration time. The length of that portion of the fuel-air mixture which needs to be ignited is actually very small, as is the specific heat of the mixture.

Scintilla's light tests confirmed that only a small fraction of one Btu is needed.

• Time and Temperature—Scintilla based its new ignition development on the philosophy that other factors being equal, the temperature of an ignition plug depends upon the energy in the spark, and its duration. The shorter the spark duration, the higher the spark temperature. Expressed another way, spark temperature depends upon the length of spark expended in the spark.

One way to increase spark temperature is to increase the current flowing through the spark. However, because the resistance of the spark gap drops as the current goes up, only 10 to 20% of the total ignition system energy will appear across the spark. Hence any small increases in ignition energy are required to obtain small increases in spark energy. Furthermore, higher energy levels increase the arcing rate of the spark plug electrodes.

A much more attractive method of raising spark temperature is to reduce spark duration. (Note: Ignition takes place in less than 5 microseconds, a spark of any longer duration serves no useful purpose.)

For example, a spark which dissipates 0.4 joules of energy in 4,000 microseconds will have a peak level of 100 volts, if the interval can be cut to 40 microseconds, the voltage will be upped to 10,000, and spark temperature will be 100 times higher for the same energy.

• Practical Results—Practical results on indications limit the level of spark duration which can be obtained. Any current limitation caused by wiring or transformer between the spark source and the spark plug will reduce the rate at which energy can flow into the spark and hence spark duration.

Scintilla first applied this new design philosophy to its model TEN ignition which used a condenser to store ignition energy, and electronic tubes to control the flow of energy to the spark plug. By eliminating inductor transformers in the discharge circuit, ignition inductance was reduced sufficiently to permit discharge in a few hundred microseconds. This enabled Scintilla to achieve a 1,400% increase in spark power over its present ignition, with only a 200% increase in spark energy.

• Further Reduction—In its latest TLN-10 ignition, Scintilla cut its discharge time further, to about 25 to 30 microseconds, according to S. E. George, assistant chief engineer. It has also eliminated the vacuum tubes and



NEW PANEL METER

Scintilla 10 in panel meters are now available with built-in illumination provided by either a 6, 16, or 24-volt lamp. Instruments are D'Arsonval movements and cover a variety of units, some with watertight case. International Instruments, Inc., P. O. Box 2954, New Haven 15, Conn.





## ENGINEERS-

Here is  
North America's  
Challenge  
To You

Firstly, making it North America's largest and finest of North American things works in the future. Yet, if you are interested in advanced education, if you'd like to work on the planes that will make tomorrow's aviation history, you'll be working at North America. North America offers these extra benefits too.

### North America Extras—

• Serious commensurate with ability and experience • Find vacancies • A permanent organization • Complete employee service program • Cost of living bonuses • Six paid holidays a year • Free facilities and equipment • Excellent opportunities for advancement • Group insurance including dental plan • Sick leave time off • Transportation and moving allowances • Employee Credit Union • Retirement-savings program • Low cost group health (including dental) and accident and life insurance • A satisfying 34 years going.

### Write Today

Please write to get complete information on career opportunities at North America. Include a summary of your education, field, grade and experience.

### CHECK THESE OPPORTUNITIES AT North America

**Aeronautical**  
Chief Engineer  
Specialist/Designer and Draftsman  
Specialists in all fields of aircraft engineering  
Structural engineering graduate  
Engineers with skills adaptable to aircraft engineering

### NORTH AMERICAN AVIATION, INC.,

Dept. 12, Engineering Personnel Office  
Los Angeles International Airport  
Los Angeles 44, Calif. • Telephone 14-0146  
North American Van Buyl Bros. Airplane  
• Flying School Company in the field

settled by fuel, a similar situation exists. To eliminate the impedance in firing loaded plugs, Seattle says that its output of ignitrons could follow a short resistance of no lower than 500,000 ohms from each wiring to a carbon loading. The TEN and TCN types could tolerate a maximum of 5,000 ohms, the new TLN-10 will fire when the short resistance is as low as 10 ohms, Seattle says.

► **How It Operates**—To provide back-up protection, jet engine ignitrons usually contain two dual and completely independent systems. The extreme simplicity of the new TLN-10 can be seen by examining one of the two identical elements. The energy receiver is a large tank condenser; it is charged from the secondary winding of a transformer whose primary is excited from the ship's supply through a breaker.

The ignitron breaker is opened and closed many times each second by a continuously rotating dc motor driving a cam. Each time the breaker is opened or closed, the surge or drop of current in the primary winding creates a voltage on the secondary which adds to the energy already in the tank condenser.

The surge of dc motor also serves to operate the contactor which re-sets the tank condenser to the igniter plug to permit it to discharge through the plug. The contactor closes 5 or 13 times a second (approximately), depending upon the ship's supply voltage (14 or 25 v.). The breaker opens and closes several times for each movement of the tank condenser.

A switch between the transformer and tank condenser prevents the condenser from discharging back through the transformer. A small condenser across the breaker contacts is used to prevent serious arcing of the breaker contacts. The dual elements are independent except for the dc motor operating the contactor and breaker.

► **The Future**—The principles of TLN type of low tension ignitrons may find application on recuperating engines, Seattle thinks. Its decreased spark plug erosion, freedom from fouled plugs, and elimination of high voltage problems would make it attractive. It would also enable jet ignitron developments to help ease some of their debt to piston-engine experience.

### New Reactor Catalog

Southwestern Industrial Electronics Co. has prepared a complete catalog describing its low-frequency transformers and reactors including a new saturable core. SIE uses its transformers and chokes having unusually high inductance giving excellent low-frequency performance. (2811 Post Oak Road, Houston, Tex.)



### ENGINE SERVICE

PAC's engine and accessory service team does more than service aircraft, helicopters and general aviation for 24 years.



### AIRCRAFT SERVICE

PAC's availability record is well known. They are on call at all times and their departments serve commercial and military aircraft.



### NAVAVIATION

Naval research, development and engineering of Naval aircraft and equipment. PAC's naval aircraft maintenance team has the equipment for testing for 24 years.



### TOOLS & SERVICE

Distributors for aircraft and parts manufacturers serving customers throughout the world.

### PACIFIC AIRCRAFT CORP.

BERKELEY, CALIFORNIA  
Other operating divisions at...  
Chico, Oakland, California  
London, Wm.  
Kansas City, Kans. & Wichita, K. S.



### New Oscilloscope

#### Withstands Shock

A small 8½-in. oscilloscope with 12 measuring channels has just been introduced by McIntosh Graphical Laboratory. The manufacturer says tests of the U. S. Naval Ordnance Lab. showed that new Model 140 capable of operating under extremely high shock conditions (100 to 500 G).

The oscilloscope records on 3½-in. wide film and holds a 40-ft. strip. These film strips are available by changing grid and all operating controls and the viewing screen are accessible from one end, the manufacturer says. A variety of galvanometers with undamped natural frequencies as high as 5,000 cps are available for use with the new oscilloscope.

McIntosh Graphical Laboratory, Tulsa, Okla.

### 70000 FILTER CENTER 30000

► **GP-30 To Get MH Stabilizer—Control** GP-108 jet fighters, built by A. V. Roe, will be equipped with a new Minneapolis-Honeywell jet air stabilizer (damper) to eliminate Dutch Roll characteristic common in high speed jets. MH says the stabilizer called a yaw damper, will be such advanced ones previous dampers and can be expanded into a complete air pilot at a later date if desired. Cost estimates to about \$1.7 million.

► **New Wing-Ang. Regulator—Writing** hence is expected to overcome a new all-superior variable speed regulator valve. It will use no variable tubes, as contrast to normally-enclosed GE wing-ang. regulator which requires a cold cathode tube to establish a reference voltage. (Aircraft Eng. Aug. 11, 1952, p. 36)

► **Speed Up F-94C Antiplane Test—USAF** will allocate a Lockheed F-94C to be used solely for flight testing the plane's new Westinghouse W-34 antiplane. Westinghouse had been unable

to get sufficient flight time to run out antiplane stability problems on previous test plane because of higher priority given to other airplane problems.

► **Colias Tests Approach Horns—Analysis of flight records** showing excellent performance of Colias 140's approach horns. Flight director during 100 under-the-hood ILS approaches of 10 different airports shows that 84% could be within 25 ft. of runway centerline, 94% were within 50 ft., Colias says. Flight records are now being analyzed to establish glide slope performance.

► **New D-C Power Supply—General** Electric Corp. has announced its "400 series" of regulated dc power supplies for lab use. Two standard units which hold output voltage constant within 1% from zero to full load are available for immediate delivery. Each provides 200ma. of regulated power; another 200ma. of unregulated power, plus 6 amp. of 5.3 v. dc for filament supply. The Model 401's regulated voltage is adjustable between 250 and 500v.; its unregulated voltage supply is 610v. The Model 402's regulated voltage can be adjusted between 150 and 325v.; its unregulated voltage supply is 450v. (Electrical Eng. Chicago Apr. & Power 36, Bristol, Pa.)

### For Dependable Hose Connections

**WITTEK**  
STAINLESS STEEL  
*Aviation*  
HOSE CLAMPS



TYPE W-100 (Standard)  
With one-piece housing  
TYPE W-101 (Special)  
With two-piece housing

Define Inquiry or for Item Specifications—F.L.L. Approval

**WITTEK**  
Manufacturing Co.

420111 West 24th Pkwy., Chicago 23, Ill.



- EXPERIENCED FLIGHT TEST INSTRUMENTATION ENGINEERS
- FLIGHT TEST ENGINEERS
- FLIGHT TEST ANALYSTS

Dealing with  
GUIDED MISSILES  
• AIRPLANE SYSTEMS  
• AUTOPILOTS

The Missile and Control Equipment Laboratory of North American Aviation has openings in its flight test organization to handle flight testing of guided missiles and electronic control systems.

Excellent opportunities are offered for experienced engineers and specialists with airplane and guided missile flight test and flight test instrumentation background. Outstanding opportunities are available on a long-range development program on long-range guided missile work.

- SALARIES COMMENSURATE WITH TRAINING AND EXPERIENCE
- EXCELLENT WORKING CONDITIONS
- FINEST FACILITIES AND EQUIPMENT

Write now.  
Give complete resume of education, background and experience.

### NORTH AMERICAN AVIATION, INC.

Engineering Personnel Department  
Missile and Control Equipment  
Laboratory

12214 LAKEMORE BLVD.  
DOWNEY, CALIFORNIA

# THE COUNTRY'S LARGEST EXTRUSION PRESS...

now being installed by Alcoa...

increases maximum extrusion size

from a 15-inch to a 23-inch

circumscribing circle, or from 600 pounds

to 2300 pounds per piece

The 12,500-ton squeeze of this press means that Alcoa extrusions can be larger, heavier, and more intricate than before. Ribbed extrusions for panels, for example, can be made, as illustrated, 34 inches wide—saving greatly in riveting and assembly.

For complete information call your local Alcoa sales engineer.

ALUMINUM COMPANY OF AMERICA

MOD. GULF BUILDING, PITTSBURGH 16, PA.



## EQUIPMENT

### TPA Aloha: The Fly-by-Day Airline

- Five-DC-3 inter-island carrier plans growth.
- Upping flight frequencies is a main concern.

By George L. Christie

**Honolulu, T. H.**—The business of operating an airline is increasingly hectic.

Take TPA Aloha Airlines. The opening section of the airline shuts down every evening at 7:45, after 15 flights. It begins airborne again at 6 a.m.

On the other hand, the carrier's shops at Honolulu Airport are devoid of mechanics during daylight hours—tool boxes locked and stacked, bays empty.

At midnight, Aloha's maintenance personnel close the job to keep the carrier's fleet of five DC-3s in top mechanical condition. They go home to sleep.

And another of Aloha's departments, Passenger Service, has some interesting ideas—particularly, how to ease one of the biggest headaches in airline business, no-shows. Simply sell the passenger a cash register receipt instead of a ticket to a specific destination. No seats reserved, first come, first served.

Only One Feathered—Aloha officials believe they have set something of a record by flying 4,160,000 mi. in 54 years before losing a feathered friend on Feb. 2, Whistler, B110392, crashes. The figure is particularly interesting because the carrier's bays are only 100 sq. ft. each and there are five frequent engine-consuming accidents are standard operating procedure. The airline attributes part of this record to its strict 25-hr. inspection procedure which includes pulling of screws and fasteners. Engines are overhauled at 1,200 hr. by Southwest Airways in San Francisco.

Major engine problems noted were sticky valves. Trouble usually begins at half engine life. One, so far, is to race past. TPA also is experiencing one problem which is a constant by chasing plating the part and making frequent inspections.

Stock plans (Champion B175 I) go a full 100 hr. at Aloha. The carrier has plans to take a 300-hr. test, check the gap and run them another 100 hr. If they are in good shape, just TPA maintenance personnel think they will



TPA TERMINAL, Honolulu, shows the building and aircraft.



NATIVE MECHANIC, Honolulu, works on a DC-3 engine, a frequent overhaul job due to short hauls.



MAIN OVERHAUL BASE at Honolulu, where a DC-3 is undergoing checkup.

ly, an altitude to 400 ft will be used.

• Around the Ship-A team through the Aloha jumper and ship facilities brought out these observations by the crew's maintenance personnel.

• Corrosion is a big problem, especially on the main surfaces of wings and stabilizers because of the over-persistent salt-laden air. Turbo Products' 3002 brightening agent has proved effective in a patch and corrosion inhibitor.

• Fuel drain lines have been changed from solid to Aeropyrex flexible line. Much cracking, breaking and resultant leakage has been eliminated.

• Unloading is lifting the 6 in x 4-in

main—out but when you consider that the entire cab operates during daylight hours.

• Generator overhaul period has been cut to 600 hr, exactly half the engine overhaul time. Result has been a 60% reduction in generator overhaul costs because units are pulled before trouble ever out, bearings fail in gear shafts break, causing an unscheduled overhaul and usually expensive overhaul job.

• Interior of Aloha's DC 3 fleet is being scuffed in an effort to save these. They prefer an old painted, suspended bracket, and with no decked with gross shock and bearings is suit gay cloth. Green leatherette covers the seats. Win-

low curtain display as Island floor post. Individual ventilation add or to that calculated by starting from zero.

• Brake cylinder leakage is a problem, aggravated by frequent lockups and burned brakes are suspected every 200 hr, average shoe life is 500 hr.

• Aloha performs all its own maintenance except for powerplants (including carburetors and propellers).

• Fuel air left in a measure. Passengers get oxygen to read and water to drink, the latter sometimes supplied by emergency use.

• Double the Load-Ruddy F. Tonga, TPA's president, cited the fact that April, 1952, was the last month in which TPA had succeeded in doubling its passenger load over the same month a year ago. He indicated that if the first few months were accurate, program tactics of the entire year 1952, his airline would show a \$125,000 profit as opposed to a \$200,000 deficit in 1949 when the carrier started scheduled operations.

The airline TPA, he said, stand out only for "Trans Pacific Airlines," but also "The Fongler Airline." He explained that the carrier's fleet is composed at \$1.80 per value to put it within everybody's reach. Tonga said he wants to expand membership to every corner of the territory so that every time a TPA plane takes off, the people will say, "I've got a piece of that plane."

• Operations Picture—The Hawaiian Islands present many tempting patterns to airline operations. The two most visible almost no weather problems—whether a good about 90% of the time, and practically no surface transportation competition. For all practical purposes, airports provide the only means of reaching between the six principle Hawaiian Islands of Kauai, Oahu (Honolulu), Maui, Lanai, Molokai and Hawaii.

David Bess, TPA's executive vice president, stressed that fact that air traffic in Hawaii needs to make flights with aircraft equipped to handle 10-15 passengers. Current traffic does not require large planes whose flights have to be spaced to meet adequate payloads at relatively high cost.

Bess added that his company's 28 seat DC is provide enough capacity for 90-95% of TPA's flights which are at most 100% parallel to its competitor, Hawaiian Air line.

To sum up, Bess said TPA is concerned with two things:

• High flight frequency—currently at 10 max intervals.

• Low operating cost to combat rising prices. He cited these reasons in costs a less than those years had, up 10% labor, 25%, taxes, 57%, parts, 100%. (However, operating costs in terms of aircraft resource make are down 10%.)

# JET ENGINEERING

## ... a challenging opportunity

Jet Engineering means more than a profession — it means pioneering a new industry.

Only 10 years ago General Electric produced the first American jet engine. Since then jet power has revolutionized aviation, and G-E has become one of the largest jet engine builders in the world.

The future of the jet engine is potentially limitless. For example, the market for jet transport aircraft has only been scratched. Today, the world's airlines are preparing for the new era of jet powered air travel.

General Electric Aircraft Gas Turbine Division offers an engineer unusual opportunity to shoulder responsibility. Here, an engineer's progress is linked only by his own ability.

This is your opportunity for a permanent career in a progressive new industry. We invite you to match your qualifications with the challenging assignments listed below.

### POSITIONS AVAILABLE IN JET ENGINEERING

DESIGN	TESTING	ENGINEERING
DESIGN ENGINEER	TEST ENGINEER	DESIGN ENGINEER
DESIGN ENGINEER	TEST ENGINEER	DESIGN ENGINEER
DESIGN ENGINEER	TEST ENGINEER	DESIGN ENGINEER
DESIGN ENGINEER	TEST ENGINEER	DESIGN ENGINEER

Positions are available in West Lynn, Mass., and Lockford, Ohio. Please do not apply if your best skills are being used for vital defense work. Send your resume to Technical and Supervisory Personnel, Aircraft Gas Turbine Division, Dept. A.

**GENERAL ELECTRIC**  
F O BOX 170  
CHICAGO 15, ILL.

This modern engineering and administration building is the hub of all activities at G-E's jet center.

Boeing B-47, shown in subsonic test flight. Powered by six G-E engines, the B-47 is the fastest bomber in the world.



Currier of G-E's DC-3. After 10 years, the plane is still among the planes powered by the engine in the United States. American DC-3 before.



G-E engineers complete the design of a new engine. The engine is shown in the background.



G-E engineers complete the design of a new engine. The engine is shown in the background.



## THE DE HAVILLAND

# Beaver

## AERIAL DUSTER

**WORKING LIKE A Beaver**

The Duster will take off with a gross load of 5100 lbs. in 11 seconds, or 180' (zero wind). Will average 12 round trips per hour with 1800 lbs. of dust each trip. Will dust 96 acres an hour. Turnaround time 1 minute 30 seconds.

**AND THE "BEAVER" WORKS FOR JUST 27 CENTS A TON-MILE**

**DH**

FOR FULL PARTICULARS  
THE DE HAVILLAND AIRCRAFT OF CANADA, LTD.  
POSTAL STATION 1  
TORONTO, ONTARIO  
TELEGRAM "MOTH"



Another  
new Navy fighter  
—Grumman's F9F-6—  
assures pilot vision  
and pilot protection  
with



LASTED MEMBER of a long line of Navy fighters produced by Grumman Aircraft Engineering Corporation, Baltimore, Md., is the F9F-6 "Corsair" in service "over 6000" hours—performance with low landing and take off speeds that make it ideal for training and front-line operations in the mid-level to better position, aircraft carrier from Pittsburgh Multiplate Safety Glass.

## Pittsburgh Multiplate Safety Glass

• The faster, better-performing planes that are taking their place as part of America's air arm today have characteristics that differ so widely as the tasks for which they were designed. But most of them have one thing in common. Almost without exception, they are equipped with Safety Glass by Pittsburgh.

The new Grumman F9F-6—a plane which began rolling off the production line less than five months after the first flight of the prototype—was a worldwide of Pittsburgh Multiplate Safety Glass. This bullet-resistant, scratch-resistant type glass, renowned and respected to provide maximum optical properties, is almost standard equipment for warbirds of fighter planes.

Aircraft manufacturers turn to Pittsburgh Safety Glass as frequently, because they know Pittsburgh offers the widest selection of special purpose Safety Glass, backed up by competent technical assistance in selection of glass and glassing techniques.

Whether you have a new design on the drawing board, that's the time to call in a Pittsburgh Plate Glass Company technical representative. He'll work with you in selection and application of the special-purpose Pittsburgh Safety Glass that fits the design and performance characteristics of the plane. Pittsburgh Plate Glass Company, Room 2125, 552 Duquesne Way, Pittsburgh 22, Pennsylvania.



PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

a half million people flew on the Hawaiian Islands—that adds up to an average of one flight for every man, woman and child in the Islands. And TPA carried 138,349 of those tourists, an increase of 54,670 over 1953, or a 47% boost in one year.

A quick trip in one of TPA's newly delivered DC-7s from Honolulu to Lihue (on the picturesque island of Kauai) and return gives an index to the simple, on-time operation the airline offers. Passengers were taken, buses were on stopping trips, sightseeing couples, children and old women. Turnaround time at Lihue, which means a complete unloading and re-loading of passengers, mail and cargo, was a quick five minutes.

TPA Aloha Airlines had a pretty rugged beginning. Its competitors, who usually opposed them the start by its only competitor, Hawaiian Airlines. And at first, it had to buy all an route commensurate from BAA. But with its great increase in air travel popularity, Aloha was able steadily and rapidly to expand its operations. Its fleet grew from one to five DC-7s. And it succeeded in obtaining mail pay.

Today's prediction that TPA would over \$115,000 in 1952 suggests the airline is at least on its way to success.

## OFF THE LINE

Sikorski Helicopters have installed 400-hour flight instructors in two of its three Bell 47D-1 helicopters (the third 47D-1 went into service in July). Instructors include artificial horizon, gyro compass, rate of climb, and turn and bank indicators, mounted on the pedals of the helicopters. Purpose is to extend the utility of the craft to fly in instrument weather along Sikorski's 250-mile coastal route. Coast area that with these instruments, pilots can bring copters into GCA airports in almost any weather.

East Report Corp. has a contract, commencing July 1, 1953, to provide service and supply of various fuels and engine oils to U. S. government aircraft in 55 cities located in 42 countries in Europe, Africa and North and South America. East says that it is the most extensive contract of its kind ever to be signed into by the government. Grades of gasoline involved are 115/145, 100/130, 95, 90, 80, and jet fuels.

Eastern Air Lines' new 100,000-sq-ft terminal building at Miami is progressing rapidly. Foundation and underground piping of the \$5-million, 1,219-ft-long building are approximately 95% complete. Grading for the 29 acres of

## Easiest way to get into an airplane?

**ADAMS-RITE SPECIALIZED  
LOCKS ARE DESIGNED TO DO  
THIS JOB BEST**

The locks shown below for exterior doors on aircraft are among hundreds of locks, latches and closure devices developed by Adams-Rite to meet specific requirements. Perhaps one of these locks can be adapted for your use...at our engineers are available to design and produce any type of closure device to your exact need.



**YALE  
LOCK**

Positive action of dropping handle which positively locks door top and bottom only after door is closed and remains locked to lock. May be broken and unlocked from outside by using handle which operates for emergency exit. Weight 1.5 pounds.



**1471 PRESSURIZED  
LOCKING HANDLE**

Push design, pressurized handle and spring return to top and back handle which is locked by push button. Internal handle device, double handle device for driving locking system. Weight 1.4 pounds.



**A87  
PRESSURIZED LOCK**

Locks and solenoids operated by bar and large exposed handle. Operated handle operates. Approved for use as exterior door on pressurized aircraft. Weight 1.5 pounds.



**1479  
FLUSH  
LOCK**

Push design, pressurized handle and spring return to top and back handle which is locked by push button. Close secured by pushing button, spring loaded lock bolt. Internal handle always operates. Weight 1.2 pounds.

Engineering Data Available

**ADAMS-RITE MANUFACTURING CO.**

340 WEST CHEVY CHASE DRIVE, GLENDALE 4, CALIFORNIA, U. S. A.

BROOKLYN, LOUISIANA—DETROIT, LANSING, NEW YORK, CHICAGO, MINNEAPOLIS, SAN FRANCISCO

## NEW, COMPACT, LIGHTWEIGHT BENDIX-PACIFIC RADAR BEACON



This new Bendix-Pacific development is an extremely compact and very light weight S-band beacon. It is designed for use on aircraft and ground stations to increase the operating range of the tracking radar by reflecting the normal wave with a reflected signal.

Despite its extremely size, the beacon has been fully engineered to withstand the shock, vibration, and temperature conditions encountered in actual installations.

### SPECIFICATIONS:

**Size/Weight:**  
—at this signal for steady operating

**Signal:**  
—100-150 mV rms with central frequency 1700-1800 Mc

**Power Output:**  
—100 watts at 1700 Mc

**Frequency:**  
—1700-1800 Mc

**Power Requirements:**  
—100 watts at 1700 Mc

**Operating Temperature:**  
—-55° to +125° F

**Shock:**  
—100 g's at 1700 Mc

**Vibration:**  
—100 g's at 1700 Mc

**Size/Weight:**  
—at this signal for steady operating

**Signal:**  
—100-150 mV rms with central frequency 1700-1800 Mc

**Power Output:**  
—100 watts at 1700 Mc

**Frequency:**  
—1700-1800 Mc

**Power Requirements:**  
—100 watts at 1700 Mc

**Operating Temperature:**  
—-55° to +125° F

**Shock:**  
—100 g's at 1700 Mc

**Vibration:**  
—100 g's at 1700 Mc

**Pacific Division**

**Bendix Aviation Corporation**

**WORTHINGTON, CALIF.**



complete. Grading for the 20 acres of concrete apron that will surround the structure is finished and surface is underway. The maintenance building is similar to BAI's existing overhaul facility. It will be able to accommodate 16 Super Constellation main line aircraft.

Specialties, Inc., needed a wind-tunnel to test its angle of attack system, but could save purchasing. So it made its own. The system, L. I. firm's pocket-size tunnel has a 2-in. x 1-in. working section, is powered by a 1/2 hp. electric vacuum cleaner blower which provides wind velocities up to 150 knots. Accuracy of measurements taken in the tunnel exceed 1/30 of 1 degree, according to Specialties.

## NEW AVIATION PRODUCTS

### Larger Sel-Lok

Being demand for Sel-Lok Spring Pins has caused the manufacturer to add larger diameter sizes to its product line, the company reports.

These pins are available in diameters ranging from .015 to .030 inch. They are available in standard and light-duty wall thicknesses. In larger sizes now being introduced they are supplied in .312-, .375- and .500- diameters.

Sel-Lok Fastener Corp., 279 Stephens St., Bellerose 9, N. Y.



### Meters Resist Shock

Improved electrical measurement meters meeting Specification MIL-M-10304 and ruggedly built to withstand extreme conditions encountered by military aircraft are the latest in a line of precision products produced by Sen Electric Corp.

The meters are available in d.c. vol-

## SPS aircraft fasteners



### STANDARD "SIX-DIGIT" ENGINE BOLTS

All listed diameters  
—hex and round  
—standard types, AM  
specifications

### HAS SHEAR BOLTS

Close tolerances,  
high strength, high  
shear type

### HAS INTERNAL WRENCHING LOCK NUTS

Superior safety  
nuts, standard 1/4",  
5/16", 3/8"

### HAS INTERNAL WRENCHING AIRCRAFT BOLTS

Latest HAS specification  
nuts, standard 1/4",  
5/16", 3/8"

INFORMATION UPON REQUEST: ADDRESS DEPARTMENT SPS

## FLEXLOC



### FLEXLOC SELF- LOCKING NUTS, REGULAR TYPE

Both stop and lock nuts.  
One piece construction, no  
shifting segments lock posi-  
tively with uniform torque.  
Aircraft approved, sizes  
#4 to 1 1/2" inclusive. Reg-  
ular and FLEXLOC approved  
for temperatures to 550°F.

### FLEXLOC SELF- LOCKING NUTS, THIN TYPE

Lowest regular height,  
yet conform to accepted  
standard. Heavy flange,  
including the locking  
flange, carries the share  
of load. Heavy-duty regu-  
lar. Aircraft approved, sizes  
#4 to 1 1/2" inclusive.

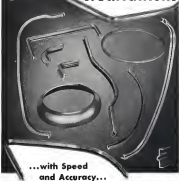
### FLEXLOC EXTERNAL WRENCHING NUTS

Locks positive. Formed  
flange self locking prin-  
ciple and one-piece, self-  
metal construction latest  
HAS specifications. Sizes  
from 1/4" to 1 1/2" NF  
Thread Series. Aircraft  
approved for temperatures to 550°F.

INFORMATION ABOUT FLEXLOC ON REQUEST: ADDRESS DEPARTMENT SL  
AIRCRAFT PRODUCTS DIVISION  
STANDARD PRESSED STEEL CO., JENKINTOWN 3, PENNSYLVANIA



## STRETCH and COMPRESSION CONTOUR FORMED PARTS to your SPECIFICATIONS



...with Speed  
and Accuracy...

no buckling of horizontal flanges

Economy is one of the many advantages that make Coolest Forming an important factor in the construction of aircraft, jet engines, guided missiles, railroad coaches, trucks, buses, etc. Single or compound curves, trac, full circles or segments, shallow bends or sharp radius curves can be formed in most metals, including 95% aluminum. Many manufacturers have profited by using our highly experienced Forming Division as an extension of their own production facilities. Send us a print and quantity requirements of some of your needed parts and we will quote on them.

Get new drawings today! Call 212-212-2121 or get the price and your copy is waiting for you. Send for it.



THE CYRIL BATH COMPANY

Manufacturers of Metal Forming Machinery  
7948 MACHINERY AVENUE • CLEVELAND 2, OHIO

motors, sensors, microprocessors and auto-actuators and are precise enough for critical electronic functions involving control, detection, transmission and signaling, according to the firm.

Here is a point-by-point listing of improvements, as given by Sesa:

- Motor mount shock-mounted and braced in rubber-lined case
- Motor movement supported by die cast frame for greater strength and accuracy
- Observation window rubber gasketed and sealed to rubber housing providing hermetic seal of high dielectric strength
- Non-slip mounting of observation window secures window to shock
- Slight curvature of window reduces chance of breakage
- Terminals die-cast and provided with fused bonding wires to facilitate wiring
- Resinage or damage in wiring reduced through use of rigid mounting of terminals and use of flexible interior conductors

Sesa Electronic Corp., 6321 Automobile Ave., Chicago 31, Ill.



### Light Baggage Cart

New lightweight baggage cart designed for one-man use is capable of handling up to 1,250 lb. of baggage at other cargo. Built of an aluminum channel frame, with folding and steel components, the cart is 76 in. long, 36 in. wide and sits 26 in. from the ground. The frame has been ordered by Pioneer Air Lines.

Venus Metal & Mfg. Co., 6214 Foxcroft Park Road, Dallas, Tex.

### Wide Angle Lens

A wide-angle lens for high-altitude photography, capable of covering fields of 90 deg. at openings up to 16:1 and with focal length of 54 in. as being used in the point KB-56 reconnaissance bomber at the 9th Wing based at Travis AFB, Calif.

Named the Mefragon, the coated optic is reported to be virtually distortion-free.

Branch & Lomb Optical Co., Rochester, N. Y.

Canadaair  
JOINS Beech  
IN CHOOSING...

# South Wind

## CENTRAL STATION HEATING PACKAGE

**Rates South Wind output highest  
in so compact a unit!**

Now—from Canadaair and Beech Aircraft Corporation—comes the new proof: new acceptance of South Wind superiority in Central Aircraft Heating!

Compared with ordinary type heating systems, the new South Wind package provided Beech with a unit 25% to 50% less in weight. A unit 50% to 65% less in initial cost. A unit with up to 75% less service requirements, service costs and spare parts requirements.

Ideal for large cargo planes. Large multi-engine transports and general heating in support of these aircraft, this new South Wind Central Heating Package affords savings never possible before in aircraft heat. Why not find out why yourself? Check—right now—the performance advantages shown below. Write South Wind for complete details today!

**Only South Wind combines all these advantages in Aircraft Central Heating**

1. Ability to produce regulated outputs between 250,000 and 400,000 BTU/hr. constant heat flow.
2. Accommodates wide variations in room air pressure.
3. Low pressure drop.
4. Reliable at 60 bar static pressure.
5. Proven in field and production experience.

To solve your Heating Problems write today for the experienced counsel of South Wind's trained field engineers in adopting this or any other model in the complete South Wind line of heaters for commercial, military or civilian aircraft. Model range in capacity from 30,000 to 700,000 BTU/hr. South Wind Division, Brewster Warner Corporation, Indianapolis 7, Indiana. Brewster Warner Corporation of Canada Ltd., Belleville, Ontario.



# South Wind



**AIRCRAFT HEATING  
AND THERMAL  
ANTI-ICING EQUIPMENT  
INERT GAS GENERATORS**





Every pound of your aluminum is usable when you buy blanks from...

## REYNOLDS FABRICATING SERVICE

Saves an average 30% scrap loss, plus scrap handling

Scrap loss, shearing and blanking is resolved immediately at Reynolds plants without costly loss of time, transportation and storage, replacement between cities, or decrease of valuable metal. You can use all of the aluminum you receive... without delay... without scrap loss. In addition, you realize important savings in handling, storage space, work space and manpower.

Reynolds Aluminum Fabricating Service offers extensive facilities to produce semi-fabricated blanks, or completed parts and final assemblies. Quantities on aluminum blanks or parts can be furnished to your drawings and specifications. Technical assistance from aluminum fabricating specialists is available for your problems.

For additional information, write for literature.

name, or call the Reynolds office listed under "Aluminum" in your classified telephone directory. Reynolds Metals Company, P.O. Box 1000, 2050 South North St., Louisville 1, Kentucky.

### Reynolds Aluminum Fabricating Facilities

One of the country's most complete facilities for aluminum fabricating facilities:

- Over 100 mechanical process stamping lines 2 to 1750 tons
- Hydraulic presses from 200 to 5000 tons
- Equipment for shearing, blanking, forming, leveling and welding, roll forming, finishing and extruding

These facilities are unique in density. One of the most advanced plants in your operations and production requirements.



## REYNOLDS ALUMINUM FABRICATING SERVICE

BENDING • DRIVING • STAMPING • TURNING • EXTRUDING • FORMING • ROLL STAMPING • TUBE BENDING • WELDING • FINISHING

## AIR TRANSPORT

### Three Airline Mexico Certificates Voided

- President cites six years of failure in attempted negotiations as one of reasons for his action.
- Another: It gives U.S. agencies a fresh start and free hand in bargaining. Braniff, EAL, WAI hit.

By F. Lee Mason

In an action unprecedented in U.S. and aviation history, President Tamm has voided the Mexican air certificates of Braniff, Eastern and Western airlines. The certificates were issued six years ago in the Latin American service route, but these three airlines never got Mexican permission to operate the route, although American Airlines and Pan American operated the Mexican routes they gained previously.

The President withdrew the Braniff, Eastern and Western certificates without consulting State Department or the Civil Aeronautics Board. He has ordered State to hasten preparation for fresh negotiations to get a "fair and equitable bilateral air transportation agreement providing for a sound pattern of air transportation between the two countries."

► **Turnabout**—This is a new approach to foreign air negotiations. The CAB might suggest other lengthy procedural considerations, and then State, with broad participation, tries to get the needed landing rights.

The Mexican situation, the President has feared that around. State and CAB may negotiate bilateral rights into Mexico. Then the Board would issue certificates to accommodate the pattern accepted by Mexico and the U.S. after the usual procedural steps.

The cancellations brought immediate speculation among industry observers as to whether airline industry had been bound to leave on the President by one of the U.S. airlines now serving Mexico.

In his letter to CAB Chairman Donald Noyce, the President cited three main reasons for his action.

- Six years' failure of negotiations under the previous state of affairs.
- To smooth negotiations by giving U.S. agencies a free hand in bargaining, with a fresh start.
- To stop official interference on an standard basis, covering several "document-to-government" bargaining pro-

cedures. For example, Eastern Air Lines recently made a deal with Mexico that would have allowed EAL to serve the crowded Mexico City route, but the EAL-Mexico deal also required that the U.S. government allow reciprocal rights to a Mexican line and Eastern's rights were to be paid only as long as the Mexican line made a profit on its U.S. flights.

This and other recent individual negotiations with Mexico had thrown U.S.-Mexico relations "into a new world," a U.S. government official told Aviation Week.

The President's action stirred more discussion in civil international aviation circles than any Truman act since his overruling of CAB's denial of the Pan American Airways Mexican December 1956 route.

► **The Question**—But questions dominated by international aviation officials of CAB, State and the airlines.

► **What Airlines Will Serve**—American and Pan Am already serve Mexico City, under the President's action, Braniff, Eastern and Western may no longer have any claim at all to be over. If it can secure new Mexican rights after new negotiations, it could be Delta, Gulf or National or some other line, as well as any of the lines who lost their certificates.

others were observers have predicted. "Given airlines' claims," one question is whether Braniff, Eastern and Western can claim joint "grandfather" rights to any new future Mexican certificates that CAB may issue.

► **President's** Might the President's unilateral approach to bilateral air agreements be repeated in event of future theory relations similar to this? Right now, while certificates are not held up by inability to get foreign landing rights, some individual points-parts of certificates are to be held up, but a CAB official said he doubted the President could or would withdraw his signature from part of a certificate. Some individual points-parts of certificates will still hold up by the foreign governments are Braniff in Bogota, CAB to Netherlands West Indies, Pan Am to Panama and a string of Brazilian Port Cities, now.

► **Why** were CAB, State and hold State Washington observers noted why the President acted without consulting State or the Board first. But a State Department official told Aviation Week that the air controversy has long been a thorn in the side of general U.S.-Mexico economic relations, and the President has been close to these problems—hence probably felt to these problems for lengthy discussions.

► **Outlook**—Observers at State Department and CAB said the President's action may have cleared the air and given an opportunity for a successful bilateral air agreement. They pointed out that the situation could not be worse than it has been since 1946.



CONESTOGA TRAWLER STARBOARD

This World War II surplus Red K-1 Conestoga was recently picked up in Cuba by Trawler Trawlers Ltd. and fitted to the trials for freight operations. Sturdy and bright it is specially adapted to the

highly successful and hauling of fish by air, which is commonplace in Hawaii. The hull is said to be in good, short field characteristics and is able to carry 10,000 lb. It is powered by K1050 50.

## Coach Convoirs

- Maker and CAB push new convertible version.
- A flexible arrangement could seat 30 to 56.

Consolidated Vulture and Civil Aeronautics Board are both urging airlines to specify Convair's "convertible" passenger seating arrangement in the 171 Convair seat sale order. The convertible allows an easy switch to touring derivatives from 30 to 56 passenger seating of the standard 44 seats now specified.

The \$25,900 extra per new plane, the "Convertible Convair" boasts a 275-hp engine in remote position, the manufacturer's fuselage doors, plus ability to change seating arrangement temporarily and at will to meet varying demands of different routes, seasons, competitive bids, and charters.

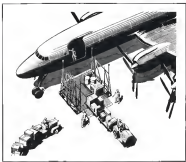
One of the U.S. has agreed to the change in use.

► **Two-Engine Wings**—Convair is actively pushing convertible in such version because it believes these more conventional planes may lose the two-engine Convair to provide the low-weight and high-density markets hitherto monopolized by the two-engine transport.

Convair maintains that the seating density on the convertible version is so much changed that it is "adjustable to suit each day's route assignment of the airplane." Even the 50-seat arrangement is "flexible standard," Convair claims, since it allows 50 seating and a lot more room under the seat should be a passenger's feet. And on a regular flight that is often sold out, an airline can add 12 seats since the moving of the flight and ground 5180 in more extra seating.

Earlier this summer an assembly line, Convair has arranged for AirLiaison Div at Garrett Corp. to do the job after the plant moves out of the line. The flexible seating arrangement allows the track mounting of the four rows of seats, with both halves one row apart. The present "standard" C-540 seats 44. For extremely long-range flights up to 2,000 mi., seating in the convertible may be adjusted to only 30 passengers. For high-density seating there is room for 75 seats without moving a single bulkhead or brace.

Convair's brochure states "Traffic trends and competitive situations are constantly in flux. The 51 seats in low fare service, at which point the 275 increase in seats (from 44 to 56) because more potential seats revenue per flight than from 44-seat standard lines." For example, a 56-passenger plane at a 5 convertible fare has more revenue per



## USAF, Navy Buy Big Loading Lift

A so-engineered, low-capacity loading lift for servicing cargo planes in use in quantity production for the Air Force and the Navy. Known as the Aerial Lift, this device was originally designed in cooperation with Lockheed Aircraft Corp.'s cargo studies (Aircraft Week Dec. 24, 1951, p. 20). The units are now being produced by Rockwell Corp., Los Angeles, with initial deliveries slated this month.

Each lift must lift a 15,000-lb load

12 ft. in 14 sec. The unit can be assembled or disassembled in 1 min. or less, and will now be shipped in the belly of a Super Constellation, along with other gear.

The lift, incorporating a 10-ft-lift platform, can be moved from place to place. In addition to its cargo job, it will be handy for loading later patterns for maintenance planes and can also double as a work platform for aircraft maintenance crew.

trial than a 66-passenger plane at 6 cents or more, and introduction of the 525,000 convertible installation is completely negligible in this consideration.

► **Seas Convair**—"Thus the convertible offers new important advantages in today's air market. It enables being operating routes with increased revenue potential, and further, it provides a means for this money-making operation even at reduced fares."

► **CAB Pushing**—Convertible—Caudin, director of CAB Bureau of Operations, along with most of CAB's economists staff, has been urging U.S. airlines to enter the aircraft market actively, either by buying the Convair convertible, buying new aircraft planes or converting planes. But out of the approximately 500 new transports on U.S. airline order, only five American DC-8s are convertible and no U.S. line has yet ordered the convertible Convair, according to latest reports.

Only foreign airlines have ordered

convertibles so far. KLM, Philippine Airlines, Canadian de Sol and Convair. Convair says "the Convair convertible has 'of the more than 770 undelivered 518s now on order, a majority will end up as convertibles'."

Convair quotes a "passenger airline president" (possibly PanAm's Sam Vigne) "In the future all airlines should certainly have the convertible feature. If we had had this possibility on our airplanes, it would have saved us as much as \$300,000 or more per plane through elimination of dual seats alone, without considering the revenue loss from the airplanes being out of service during modification."

PanAm is converting many of its four-engine planes to flexible seating, as well as ordering new coach DC-8s, according to CAB staff.

Last spring, Convair was even talking of 70-passenger Convairs for short-range coach service (Aircraft Week Apr. 7, p. 67).

## Tigers Win Navy Contract from Slick

The Flying Tiger Line, after a battle of low bids and Civil Aeronautics Administration proceedings, has opted Slick Airways' Navy supply from port contract. It currently is worth up to \$300,000 gross income a month and may expand.

Tiger Line won on a low bid of 75.9 cents a C-46 plane mile. This was 3.1 cents, or 4%, under the existing CAB task of 77 cents-the rate that Slick had for renewal of the contract.

Tiger Line says the contract will boost its annual freight revenue 68%. Slick claims the contract will operate at a loss or at least no profit and may also have the effect of reducing the structure of the entire industry of the West coast coasted it. Both the freight and maintenance centers raised freight tariffs this spring because of rising costs.

► **Portals**—The contract gives a daily non-scheduled morning freight pickup service along Navy's route East and West Coast supply lines. It manages 2.5 million sq miles a month. Details of its economics and operation first appeared in *Aircraft Week* (June 11, 1951, p. 32).

When Slick's contract came up for renewal in June, Tiger went below Slick's 77-cent rate with a 71-cent bid. Slick protested to Navy and the CAB that this was against Tiger's cost and the CAB built on the bid both airlines. But Tiger had filed its new rate proposal. So Slick made a new bid to Navy of 61.5 cents and filed it with the CAB. Slick had protested both its own and Tiger's bids.

CAB suspended the low bid pending investigation, then opened a proceeding and held a public hearing. Slick withdrew operating the contract into July and August, as an extension, pending decision. But Tiger held the tentative Navy award.

Then Navy Secretary Don Knudsen told the Board that its award was of the lowest price on grounds the Navy would save from \$8,800 to \$16,000 a month. Tiger indicated at CAB conference Brown's protesting insistence that it would go ahead with the Navy contract. The air line argued that it was a contract, not common carriage, operation—hence not subject to CAB rate control.

► **Board Goes to Navy**—The Board then decided that the contract is common carriage, since Slick and Tiger offer that type service to the general public for any company or agent to accept.

But CAB acquiesced, temporarily, to the suggestion of the 75-Cent. No Navy handled the contract to Tiger.

The Board is mounting investigation of the tariff's economic justification to bid of the new rate a maximum, in Slick charges. If it decides the rate is too low, CAB may order the Flying Tiger Line to charge Navy a higher rate.

Should that happen, Tiger will have two more options, noted CAB personnel in the results of attempt to negotiate the rate with Navy. There is a question of whether that might reopen the contract and give Slick a new chance.

## PAA and Guatemala Reach Agreement

(McGraw-Hill World News)

Guatemala City—The government and Pan American World Airways have agreed on details of a five-year operating contract, according to word of agreement by Guatemalan Minister Carlos Arana Sendero and J. H. Wilson, PAA Guatemala manager.

Signature was expected immediately, with the request approved by Guatemalan Congress to follow promptly.

The agreement ended an 11-month period during which PAA had been in a day-to-day operating base in Guatemala.

Wilson and Frank Powers, PAA Latin American special representative, and settlement of operating rights gave the way for settlement of labor troubles that caused PAA to halt its Guatemala operations July 11. Wilson said a labor settlement would not set any assumption of operations.

## GAA Relaxes Its Ruling on Spoilers

Civil Aeronautics Administration will now permit manufacturers and airlines to design the "spoiler" from the wing of the Boeing Stearman and Dugan DC-8B. It is the new device CAA discarded on those planes for type certification.

The word is a flap or cockle on the wing's leading edge to make it stall earlier, its disadvantage is that it makes an airplane's leading edge stall at lower speed and lower maximum angle of attack, the only advantage being performance.

The CAA's prohibition follows revision of a Civil Air Regulation. The same factors were found to put on the spoiler by a short interpretation of the Civil Air Regulation. The airlines' subsequent CAA and the old rule required that a plane be flown into a stall, point on or secondary stall can happen without stalling before the nose drops, because of the stall of lift.

► **No New Type Manufacturers** and airlines and this was an unrelaxing rule.



# Vibration Engineering that solves your problems

**PROBLEM:** To achieve a high degree of vibration isolation in high powered engines.

**SOLUTION:** All Federal Aircraft Mounts.



It's the flexible mounting—the only structural connection between engine and airframe—that shock absorbers and provides vibration. Properly designed, they eliminate a great source of vibration and protect the aircraft structure, passengers, and instruments.

The MB Type 1770 Mount illustrated is an outstanding example of a properly designed mount. It uses a specially designed ball joint to absorb vibration, flex with the engine, and dampen it. As shown, it also absorbs shock, it also absorbs vibration. These mounts are used for engines and instrument installations on Pratt and Whitney engines.

Remember—MB products are available to help you on all phases of vibration problems—installing, testing, operation, maintenance and repair. That's why many companies select MB their headquarters for vibration equipment.

Model MB 1770 is suitable for 1000 to 1500 hp engines and is an replacement.



# THE MB MANUFACTURING COMPANY, Inc.

1647 Stearns Street, New Haven 11, Conn.



## HOW ANOTHER COMPANY SAVES WITH U. S. I. SOUND POWERED TELEPHONES

TRANSWORLD AIRLINES, Inc., solved their problems of faster and more checking of reservation equipment. One solution is the phone, the other satisfies the plane communication instructions with accuracy. Their equipment is fully portable without batteries, of course.

WRITE FOR CATALOG H

## UNITED STATES INSTRUMENT CORPORATION SUMMIT--NEW JERSEY



## When you think of STAINLESS STEEL FASTENINGS think first of ANTI-CORROSIVE

Anti-Corrosive Inc. offers stainless steel fastenings in stock for immediate delivery. . . plus exceptional production capacity that can fill your requirements beyond stock item fasteners, bolters!

FREE — Write for Brochure SDC which instantly identifies A.N. and pertaining to stainless fastenings

**Anti-Corrosive**  
Metal Products Co., Inc.  
Manufacturers of STAINLESS STEEL FASTENINGS  
CASTLETON ON HUDSON, NEW YORK



plot string. . . CAA has sent four survey specialists to aid Turkey in its survey installations.

► **Hawaiian Airlines** August traffic was up 13% from a year ago to 48,889.

► **Jugoslavianski Aerotransport**, Jugoslavia, has ordered three **Comet** 440s, raising commercial order of that model over the 5168 million mark—175 planes ordered by 31 parties. (USAF bought military versions include the T-33 trainer and C-119A service troop plane.)

► **National Airlines** issued report indicating that President G. T. Baker is discussing merger with Delta, Capital and other complementary state systems.

Company also is negotiating bank loans to pay for ordered equipment and will start service New York-Mexico service soon, the report reads.

► **Northwest Airlines** last factor in August was 70%, compared with 69% in July and 77% a year ago.

► **Senate Small Business Committee** still report approval CAAI collection of independent freight line. Latin American routes at a potential for the expected trans-Atlantic freight line.

. . . Also says the current CAAI needed investigation results from the committee's June, 1951, report saying a plan to enable needed "to operate in a way that will keep them a vital, growing concern without in any way crippling or limiting the regularly scheduled carriers."

► **Silver City Airways** says its new winter auto ferry routes across the English channel are "reduced virtually to a lost level."

► **Southwest Airways** has been talking merger possibilities with **Boeing Air Lines**.

► **Transdeva Airport** is directly was most of families keeping 80 children from returning to school near one of field's revenue this month as grounds that the school location was "hazardous."

► **Trans-Canada Air Lines** say order more planes this year, for delivery in 1954. The airline reports Canada's traffic growth makes this necessary.

► **Trans-Pacific Airlines** August traffic at 24,899 passengers was up 33% from a year ago to an all-time high.

► **Trans World Airlines** intend about 811 to DC-3 fleet this month, after starting Martin 404 service to mid-airland routes. Most of the 81 DC-3s remaining will be sold.

# RESEARCH AND DEVELOPMENT

forge the **KEY** to America's future in the AIR  
take **YOUR** place . . . with **GOODYEAR AIRCRAFT**

The continued and steady growth of established research and development projects presents a number of excellent opportunities for engineering and experienced men.

### SCIENTISTS

### ENGINEERS

### DESIGNERS

Positions are available in our organization for qualified personnel in the following fields:

- |                      |                       |                   |
|----------------------|-----------------------|-------------------|
| • Electrical Systems | • Structures          | • Stress Analysis |
| • Circuit Analysis   | • Aerodynamics        | • Flight Test     |
| • Analog Computers   | • Applied Mathematics | • Missile Design  |
| • Servomechanisms    | • Electronics         | • Dynamics        |
| • Test Equipment     | • Physics             | • Microwaves      |

Openings also exist for welding engineers, civil engineers, and mechanical engineers with experience in metal fabrication; and for personnel with ability and experience in technical editing, art, and motion pictures.

Positions are available at several levels, and inquiries are also invited from recent graduates. Salaries are based on education, ability, and experience. Liberal salary, vacation, insurance, and retirement plans are yours if you qualify.

If YOU are interested in a career future, write, giving full details, to:  
Mr. C. G. Jones, Salary Personnel Department.



GOODYEAR AIRCRAFT CORPORATION, 1210 Massillon Road, Akron 15, Ohio



Higher government expenditures of worthless dollars then could accomplish nothing. Santa Claus would be dead from overwork.

#### To Provide Firm Foundations

The general route to be followed in putting firm foundations under our prosperity is quite clear. It involves two steps which must be taken closely together. The first is to stop the continuous increase in federal expenditures. The second step is to substitute expanding private business for government-financed business as the principal foundation of expanding prosperity.

The increase in federal expenditures can be stopped without sacrificing any effective measures now directed toward meeting our top priority requirements—protection from armed Communist aggression. The most competent authorities of both major parties agree it can be done by (1) better planning of and the elimination of outright waste in defense arrangements, and (2) cutting those civilian expenditures which cannot be justified at the same time we are undertaking a great new lead of defense expenditure.

It is also possible to substitute expanding private business for government-financed business. The problem is primarily that of reversing private business of the staggering load of federal taxation it now is carrying. Federal taxation now takes 52 per cent of all corporate profits and 82 per cent of all so-called excess profits. If it were not for the forced draft placed under our economy by rapidly mounting defense expenditures, this burden would surely lay a disastrous blight on private business expansion. If expanding private business is to have a chance to play its critical role as a substitute for government-financed business, its taxes must be cut, and soon.

#### It Won't be Easy

It would be naive to contend that it will be easy to check the expansion of federal expenditures. They have been running wild too long, and as the process contributing to a feverish, inflationary prosperity. Likewise, there is no reason to believe that the easing of the load of business taxes is going to be easy. The basic blight it puts on business expansion has been too long cherished by having our economy doused with artificial stimulants, most notably enormous injections of federal expenditures.

#### The Key Question—How Long?

It is obvious that prosperity is going to be a major topic of discussion in the present political campaign. There is nothing the matter with that. Prosperity is a key concern of the voters in choosing a national administration.

To make the discussion of prosperity really useful, however, it is important to ask and get answers to the right questions about it. The key question is not whether or not we have prosperity. That we have it in large measure is generally conceded.

The key question is, "How long can we continue to have prosperity?" The answer—not very long if we continue to rely primarily on new injections of inflationary federal expenditures. Santa Claus, be it remembered, is no youngster. If we continue our present improvident course, he will be worked to death. Those politicians, regardless of party, who see this clear danger and who have plans to escape it are facing up to the crucial question about our prosperity.

**McGraw-Hill Publishing Company, Inc.**

# IF..

You have above average ability

# IF..

Your present position does not offer you maximum opportunities for professional advancement

# IF..

Your present connection does not fit in with your long range plans

## Consider

working with America's oldest aircraft company. Attractive opportunity for ambitious

## Electro-Mechanical Engineers

with minimum 6 years' experience in one or more of the following fields:

### LANDING GEARS CONTROLS ARMAMENT SYSTEMS ANALYSIS

Persons who would find AERO DYNAMIC, POWER PLANT, STRUCTURAL ENGINEERING, RECENT ENGINEERING GRADUATES and ENGINEERING DRAFTSMEN.

Salaries strictly confidential; reports give full details as to experience and education. Personal interviews arranged.

**Martin**

The Glenn L. Martin Co.

Dept. 390  
Technical Employment  
BALTIMORE 3, MD.

Please to Advise since 1949



## SPECIAL OPPORTUNITIES FOR SENIOR ENGINEERS

Career or contract basis, beautiful San Diego in which you will join an "engineer" engineering department. Interesting, challenging, varied long range projects at convenient times to suit your needs in career, engineering research and electronics development. Position open in these specialized fields:

Electrical Design	Instrumentation
Mechanical Design	Thermodynamics
Structural Design	Operations Analysis
Wiring	System Analysis

Complete brief literature in data requested. For free literature write Mr. E. J. Smith, Engineering Dept. 390.

## CONVAIR IN BEAUTIFUL SAN DIEGO

2001 RADFORD HWY.  
SAN DIEGO 15, CALIFORNIA











## LETTERS

### Boeing Stock

In *Aviation Week* Aug. 31, in an article entitled "Boeing Aircraft Stock to Alight," the following statement is made:

"A total of 1,185 common shares of Boeing Aerospace Co. stock in William M. Allen's possession, making a total holding of 3,952 shares is reported in the latest Securities & Exchange Commission report."

An examination of the report which I filed with the Securities & Exchange Commission will reveal that of the 6,156 shares referred to, 1,812 were acquired by reason of the 1975 stock dividend. I do not list Mr. or Ms. Allen's Boeing stock of the company. The remaining 146 shares I reported in an article under the heading "Company stock of the company, which is not interpreted as by all approvals of the Boeing Aerospace Company."

WILLIAM M. ALLEN, President  
Boeing Aerospace Company  
Seattle 91, Washington

(During the time that *Aviation Week* that the 146 shares of B Co. stock mentioned in the above story were reported as a stock dividend, not as an award—BWA.)

### 'Crash of a Problem'

On page 39 of your June 16 issue you published an excellent article on aviation music translation titled "The Beatles of Jeane's Campagna," by Philip Kline. Mr. Kline is to be congratulated for his quiet and subtle grasp of a complex problem.

We would appreciate it very much if you could furnish us with two or 12 copies of this article for translation within our Kline and Music Service.

A. H. DAVEN  
Senior Electronic Engineer  
Coastal Video Visuals Audio Corp.  
San Diego 12, Calif.

### From Protection, Inc.

On June 2 you carried a picture with caption on page 36 dealing with the Lockheed issue. In the editorialized article of the picture, John R. Montgomery is given credit for designing the van and the helmet. Although Mr. Montgomery did design the van which is now being used on our "Tiger helmet" but I am sure he would be the first to deny any credit for the helmet.

The Tiger helmet was designed at the University of Southern California by Dr. Charles F. Lockard and Mr. Thomas P. Roth, more than three years ago and has come to be the accepted helmet for most pilot rescue that nation and is being used only confirmed to be standard for military pilots.

Your magazine and several others have published scientific weapons (New Helms Protection Theory Advanced, 124 #6), but otherwise our biography has been the only

known helmet in more news release than any other item in the history of aviation. I have been told on several occasions, but I have signed in new stories dealing with particularly carry jet plane that has flown and has been shown on the basis of some of our own in Korea. But always the story is about the van or the ship, and the helmet has never yet been named in a response to newspaper circulation.

One question, if course, is that we have contained during the past three years in a laboratory application and have not stated our identifying campaign and have not sought public recognition for our product.

L. P. CARRERI  
Providence, Ind.  
44735 West 34th  
Highway 1, Gile

### France's Position

FOR ONE, *AVIATION WEEK* has been well informed. I refer to your July 21 issue and the article headed "U.S. Fought Will And Europe's Air Industry." I refer also to your article in the paragraph, page 13, stating that "The French are not likely, are."

The fact is that, of all countries for off-sets procurement candidate, the French are those who require the least amount of assistance in the form of purchase tools (if in all-over and above what was previously agreed—which in turn was very much in response to other European countries such as the U.K.).

The French are interested in off-sets procurement, certainly because the taxpayer's money goes in first priority to help them and to maintaining and building up NATO forces, so that left a lot for development of aircraft. They require financial assistance not machine tools. Therefore, if the French were to be left out of the GEP, it would mean that their stand in the July 21 issue of *Aviation Week* would have to be published.

I am writing as a faithful *Aviation Week* reader and subscriber, not as an official inquiry. I hope, however, that this letter will prompt you to seek further information from reliable sources.

Calvin French to Fost  
RTH Manning Pl., NW  
Washington, D. C.

### Fashion Frocks & GIs

In your issue of July 21 appeared the following item:

"The feminine touch has crept into Korean uniforms as well. GIs in the Korean Department returned with a doublet that the chest pocket display unit looks like a military 'Manufactured in France' Frocks."

The purpose of this letter is to ask you permission to reprint this story in our own publication - with proper credit to *Aviation Week*, of course.

We have about 1,600 women in our employ, and they get a big kick out of knowing that with in mind that they are helping to produce a very vital defense item. If not clothing is of all so here to here that our clothes are getting through to the front lines.

JOAN J. KIRKMAN  
Director of Public Relations  
Fashion Frocks, Inc.  
Cincinnati 25, Ohio

### Korea's Different

SINCE leaving home—Control Ship, L. 1—on our maiden trip, I've been lost without my weekly consultation with the rest of the aviation world—and would appreciate your forwarding my report to the address below.

I guess none of our general maintenance practices here in Korea would interest a lot of the boys back at Lockheed Aircraft Service at Allendale. Before me—they are attending our AMT on my in that being Supervisor of Maintenance on B-1s here and is different from being Foreman Supervisor at Lockheed.

Please keep your excellent magazine coming, and send me the bill to cover the next three years.

MAJOR R. A. FOSTER  
AC14572  
1st Maintenance Sqdn.  
AFD 1774 015 Padua  
San Francisco, Calif.

### From Plasecki

Your article on our B157 Hawk House in the July 21 *AVIATION WEEK* has been making last plane here and on engines, service and sales personnel in the past week.

We all feel that Dave Anderson did a fine job. The quality of his reporting must be one of the reasons you just magazine at hand by everyone I know in the aircraft industry.

CLARENCE O. WITTE,  
Director of Public Relations  
Pascall Industries Corp.  
Mishawaka, Ind.

### Doman's 'V' Loan

We of Doman deal with interest the July 14 *AVIATION WEEK* as appreciation of the article mentioning our program by Selig Allshoff, and the financial report. Considering the importance your publication is to the aviation industry we wish to bring to your attention in error in the letter "The 'V' Loan" at \$15,000 should have said \$15,000.

CLARENCE D. DOMAN,  
Director of Public Relations & Advertising  
Doman Helicopters, Inc.  
Minneapolis Airport  
P. O. Box 605  
Dunbury, Conn.

## aluminum extrusions — MIG Alley Must

To the mild and strong will go the race for world air supremacy. That is why aluminum extrusions for our fighter jets have become a MIG Alley Must.

We at Harvey are co-operating with the aircraft industry in its never-ending search for better and newer methods of applying aluminum extrusions to both military and commercial aircraft. Many manufacturers have benefited by the recognized leadership of Harvey's staff of metallurgists and research specialists. Those who have failed to obtain answers elsewhere have come to Harvey for the successful solution of their "impossible" problems.

Harvey produces aluminum extrusions in curved shapes, bar stock, forging stock, tubing and related metal products under rigid quality control.

**HARVEY**  
**Aluminum**

MAKING THE ACQUISITION OF ALUMINUM FOR INDUSTRY



Harvey gives you the advantage of complete integrated extrusions from original idea to the final extrusion. That's the only extrusion that has specialized laboratories with the latest advanced machinery to create problems, bring them and provide the answers promptly.

DIVISION OF HARVEY MACHINE CO., INC.  
TORRANCE, CALIFORNIA  
BRANCH OFFICES IN PRINCIPAL CITIES

# Allison jets power first mass refueling flight

Confidence in the dependability of Allison jet engines is again demonstrated by history's biggest transoceanic jet plane flight. Three squadrons of Republic F-84G Thunderjets completed the 10,895-mile movement, across vast expanses of the Pacific, from Turner Air Force Base, Georgia, to Tokyo. En route, pilots of the Thirty-First Fighter Escort Wing successfully completed air-to-air refuelings—first ever attempted on a mass flight.

This history-making flight, including 2,400 miles nonstop from California to Honolulu, demonstrates the mobility of American air power—and adds new laurels to the battle-proved record of the famed Allison J35 engine.

**Another  
Allison First!**

Designers and Builders of J35 and J71 Axial,  
J33 Centrifugal Turbo-Jet Engines,  
T38 and T40 Turbo-Prop Engines



*Allison*

DIVISION OF GENERAL MOTORS  
INDIANAPOLIS, INDIANA

